

**Cultural Resources Survey Report for  
the Department of Water and Power  
Specific Plan Project,  
City of Seal Beach,  
Orange County, California**

Prepared for

**RBF Consulting  
Irvine, California**

Prepared by

**SWCA Environmental Consultants  
Pasadena Office**

September 2011

CULTURAL RESOURCES SURVEY REPORT FOR THE  
DEPARTMENT OF WATER AND POWER SPECIFIC PLAN PROJECT,  
CITY OF SEAL BEACH, ORANGE COUNTY, CALIFORNIA

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USGS 7.5-minute Quadrangle  
Seal Beach, California 1966, Photorevised 1972

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## **EXECUTIVE SUMMARY**

**Purpose and scope:** RBF Consulting retained SWCA Environmental Consultants (SWCA) to conduct a cultural resources study that includes a records search, initial Native American scoping, cultural resources survey, and preparation of a cultural resources survey report in support of the proposed Department of Water and Power Specific Plan Project (project) for the City of Seal Beach, California. The project area consists of 10.6 acres located within the city of Seal Beach, Orange County, California. Specifically, the project area is located between 1st Street to the east, the San Gabriel River channel to the west, Marina Drive to the north, and the public beach to the south.

This report was prepared in accordance with the California Environmental Quality Act (CEQA), Public Resources Code (PRC) Section 5024.1, Section 15064.5 of the Guidelines, and Sections 21083.2 and 21084.1 of the Statutes of CEQA. The study also conforms to the goals, objectives, and policies of the Cultural Resources Element of the City of Seal Beach General Plan (City of Seal Beach 2003).

**Dates of investigation:** SWCA requested a California Historical Resources Information System (CHRIS) records search on April 28, 2011. The search was conducted by staff at the South Central Coastal Information System (SCCIC) located at California State University, Fullerton. SWCA staff conducted an intensive-level survey for cultural resources on May 4, 2011, and completed a draft of this report on July 22, 2011. On September 21, 2011, an SWCA architectural historian conducted a site visit and archival research to evaluate a historic period building present within the project area. This revised report was completed on September 26, 2011.

**Summary of findings:** The SCCIC records search identified 21 prior cultural resources studies that have been conducted within a 0.5-mile radius of the project area. Two of these previous studies occurred within the project area. An additional 10 unmapped studies were also conducted within the areas covered by the U.S. Geological Survey Los Alamitos, CA and Seal Beach, CA quadrangles; these are not mapped because of insufficient locational information. Two archaeological sites and three built environment resources have been recorded within a 0.5-mile radius. There are no previously recorded cultural resources within the project area; however, one building constructed ca. 1956 is present within the project area. The building was evaluated for California Register of Historical Resources (CRHR) eligibility and SWCA found it ineligible for the CRHR. SWCA's intensive-level cultural resources survey did not identify any archaeological resources within the project area; however, the project remains highly sensitive for prehistoric and historical archaeological resources. Ground visibility during the survey was poor (averaging 5 percent). Three Native American contacts stated that the project area is highly sensitive for Native American cultural resources.

**Recommendations:** Due to the project area's sensitivity for cultural resources, SWCA recommends that a qualified archaeologist be present to monitor all ground-disturbing activities. SWCA recommends that the monitor work under the direction of a qualified principal investigator: an archaeologist who meets the Secretary of the Interior's Professional Qualification Standards (National Park Service 1983). This is in addition to standard archaeological mitigation measures to minimize impacts to unanticipated discoveries of belowground cultural resources and human remains. SWCA also recommends Native American monitoring for all ground-disturbing activities. The one historic period building located within the project area was found not eligible for listing in either the National Register of Historic Places (NRHP) or the CRHR, and does not qualify for local listing. No further cultural resources work is recommended for this building.

**Disposition of data:** This report and any subsequent related reports will be filed with RBF Consulting; the SCCIC; and with SWCA's Pasadena, California, office. All field notes, photographs, and records related to the current study are also on file at the SWCA Pasadena office.

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## INTRODUCTION

SWCA Environmental Consultants (SWCA) was retained by RBF Consulting (RBF) to conduct a cultural resources study in support of the proposed Los Angeles Department of Water and Power (DWP) Specific Plan Project (project), City of Seal Beach, California. The study includes a cultural resources records search, survey, and survey report. The project area consists of an approximately 10.6-acre parcel located within the city of Seal Beach, Orange County, California. Specifically, the project area is located between 1st Street to the east, the San Gabriel River channel to the west, Marina Drive to the north, and the public beach to the south.

This study was prepared in accordance with the California Environmental Quality Act (CEQA), Public Resources Code (PRC) Section 5024.1, Section 15064.5 of the Guidelines, and Sections 21083.2 and 21084.1 of the Statutes of CEQA (Governor's Office of Planning and Research 1998). PRC Section 5024.1 requires the identification and evaluation of historical resources that may be affected by a proposed project. This report was also prepared in accordance with guidelines set forth in the Cultural Resources Element of the City of Seal Beach General Plan (City of Seal Beach 2003).

SWCA Cultural Resources Project Manager Kevin Hunt, B.A., managed the project and served as lead report author. This report was coauthored by Architectural Historian Steven Treffers, B.A., who conducted the architectural history survey and evaluation, as well as Cultural Resources Specialist Cheryle Hunt, B.A., who conducted the cultural resources field survey. Geographic information system (GIS) Specialist Emily Kochert, B.A., prepared the figures found in this report. This report was reviewed for quality assurance/quality control (QA/QC) by Cultural Resources Principal Investigator John Dietler, Ph.D., Registered Professional Archaeologist (RPA).

## Project Description

Bay City Partners, LLC (BCP), seeks to develop a project area consisting of 10.7 acres of property formerly owned by the DWP and sold to BCP in 2003. Currently the project area is vacant, and BCP proposes a 48-lot residential development on the northern 4.24 acres of the project area. The remaining acreage would be devoted to open space/parkland; proposed park uses would include, but not be limited to, passive turf areas and neighborhood-serving play areas (e.g., tot lots). The southern portion of the project area has been heavily altered by the construction of a Los Angeles Gas and Electric facility in 1925, subsequent demolition in 1967, and environmental clean-up and remediation in the mid-1980s. Figure 1 shows the project location on the U.S. Geological Survey (USGS) Seal Beach, California 7.5-minute quadrangle; Figure 2 is an aerial photograph of the project area.



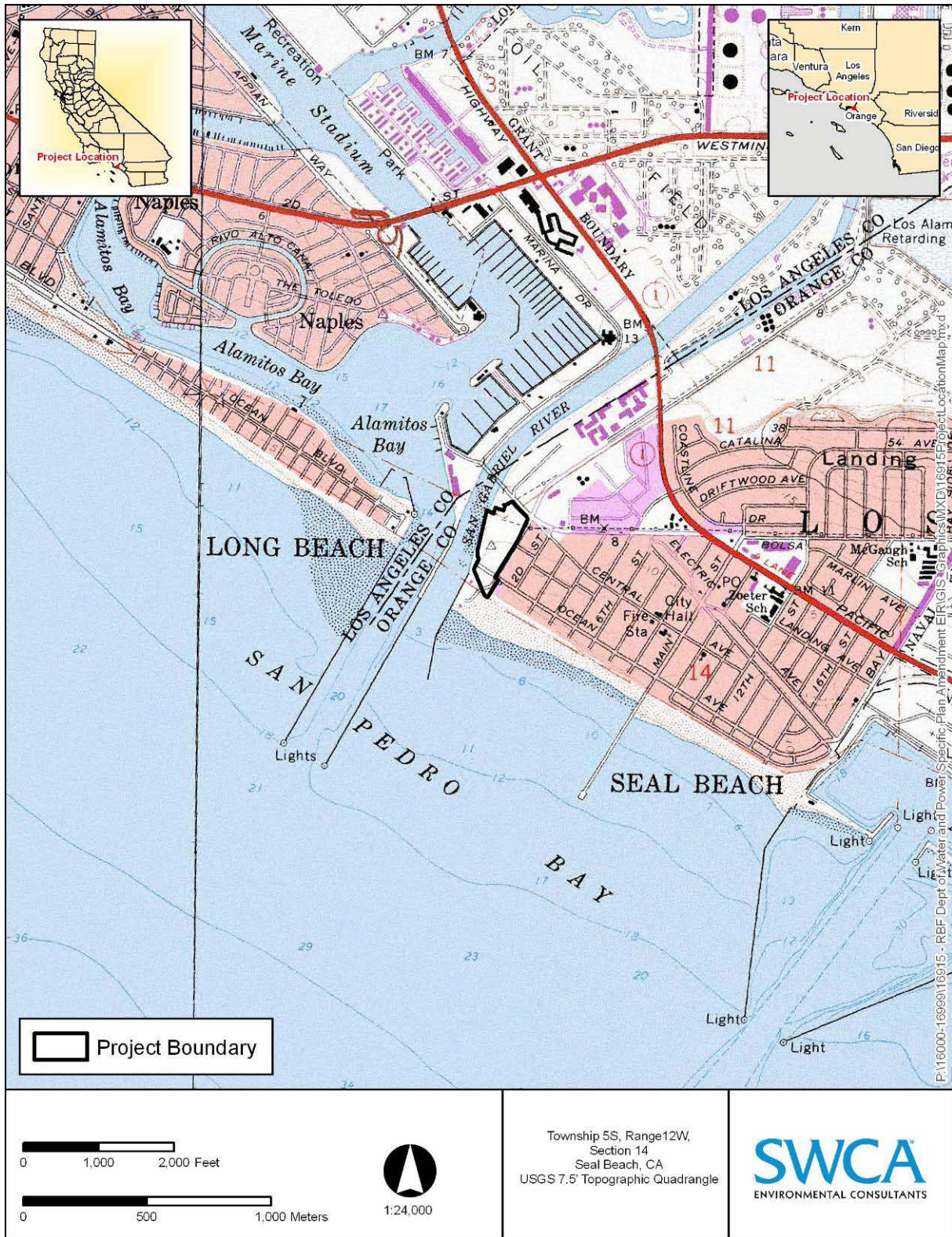


Figure 1. Project location map.





**Figure 2.** Aerial view of project area.



## REGULATORY SETTING

This section identifies state legislation and guidelines that govern the identification and treatment of cultural resources and analysis of project-related effects to cultural resources. The lead agency must consider these requirements when making decisions on projects that may affect cultural resources.

### State

CEQA requires a lead agency to determine whether a project may have a significant effect on historical resources (Section 21084.1). If it can be demonstrated that a project would cause damage to a unique archaeological resource, the lead agency may require reasonable efforts be made to permit any or all of these resources to be preserved in place or left in an undisturbed state. To the extent that they cannot be left undisturbed, mitigation measures are required (Section 21083.2[a], [b], and [c]).

Section 21083.2(g) defines a *unique archaeological resource* as an archaeological artifact, object, or site about which it can be clearly demonstrated that without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

- Contains information needed to answer important scientific research questions and there is a demonstrable public interest in that information
- Has a special and particular quality such as being the oldest of its type or the best available example of its type
- Is directly associated with a scientifically recognized important prehistoric or historic event or person

A *historical resource* is a resource listed in, or determined to be eligible for listing in, the California Register of Historical Resources (CRHR) (Section 21084.1); a resource included in a local register of historical resources (Section 15064.5[a][2]); or any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant (Section 15064.5[a][3]).

PRC Section 5024.1, Section 15064.5 of the CEQA Guidelines, and PRC Sections 21083.2 and 21084.1 were used as the basic guidelines for this cultural resources study. PRC Section 5024.1 requires an evaluation of historical resources to determine their eligibility for listing in the CRHR. The purpose of the register is to maintain listings of the state's historical resources and to indicate which properties are to be protected from substantial adverse change. The criteria for listing resources on the CRHR were expressly developed to be in accordance with previously established criteria developed for listing in the National Register of Historic Places (NRHP), enumerated below.

According to PRC Section 5024.1(c)(1–4), a resource is considered *historically significant* if it 1) retains “substantial integrity” and 2) meets at least one of the following criteria:

1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage
2. Is associated with the lives of persons important in our past
3. Embodies the distinctive characteristics of a type, period, region, or method of installation; or represents the work of an important creative individual; or possesses high artistic values
4. Has yielded, or may be likely to yield, information important in prehistory or history

Impacts to a significant cultural resource that affect characteristics that would qualify it for the NRHP or that adversely alter the significance of a resource listed in or eligible for listing in the CRHR are

considered a significant effect on the environment. These impacts could result from “physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired” (CEQA Guidelines, Section 15064.5 [b][1], 2000). Material impairment is defined as demolition or alteration “in an adverse manner [of] those characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for inclusion in, the California Register” (CEQA Guidelines Section 15064.5[b][2][A]).

## Local

### *City of Seal Beach General Plan – Cultural Resources Element*

The Cultural Resources Element of the City of Seal Beach General Plan (City of Seal Beach 2003) concerns the preservation and protection of archaeological, historical, and paleontological resources. The element provides goals, objectives, and policies, as well as guidance for the implementation of them. Appendix A of the general plan presents specific procedures to be followed for the implementation of the goals, policies, and objectives. The Cultural Resources Element and procedures in Appendix A are consistent with the statutes and guidelines of CEQA and demonstrate the City’s commitment to the protection and treatment of cultural resources.

## ENVIRONMENTAL SETTING

Seal Beach is located on the southern edge of the Los Angeles Basin and may be characterized by sand beaches against low bluffs and mesas. Local natural landforms include Landing Hill, which represents a relatively recent geological formation and the smallest of a series of uplifted hills. The rise of Landing Hill is barely visible today within the dense suburban landscape. Both Anaheim Bay and Alamitos Bay represent formations that occurred as a result of flooding in coastal drainage channels. The nearest major water features include the Pacific Ocean to the south and the San Gabriel River, which enters the ocean immediately northwest of the property. In the past, the lowland areas were known to have had extensive wetlands (California Coastal Commission 1987). Today, only a small portion of these wetlands remain protected by the Seal Beach National Wildlife Refuge, located within the boundaries of Naval Weapons Station (NWS) Seal Beach approximately 1 mile from the project area. Although vegetation communities within Seal Beach can be classified as a mixture of coastal sage scrub and wetlands, the natural landscape within the parcel has been heavily altered by the construction of a Los Angeles Gas and Electric facility in 1925, subsequent demolition in 1967, and environmental clean-up and remediation in the mid-1980s. The areas surrounding the property have undergone heavy residential and commercial development and redevelopment.

## Geologic Setting

Orange County is located within the northern region of the Peninsular Ranges province, which extends north to the foothills of the San Bernardino and Santa Monica mountains, and south to the 28th parallel in Baja California, Mexico. This province is bounded to the north by the Transverse Ranges and to the east by the Colorado Desert with a majority of the province continuing southward beyond the United States and into Mexico. The dominant structural feature in the Peninsular Ranges geomorphic province is a series of northwest-trending faults. These divide the province into numerous fault blocks, which are at variable elevations. In the northern part of the province, the Los Angeles Basin, the major faults are Cenozoic in age and are terminated by the east-trending faults of the Transverse Ranges Province. Many of these faults are seismically active. Orange County is divided into the following four geologic provinces: 1) Santa Ana Mountains Province, 2) Coyote-Puente Hills Province, 3) Santa Ana Valley-Capistrano Valley Province, and 4) Coastal Province. The project area is located within the Coastal Province, which includes the San Joaquin and Capistrano hills and the mesas along the Newport–Seal

Beach coastal areas. The project area contains primarily native sediments; however, the southern portion has been cut and graded and may possess exotic fill material.

## **CULTURAL SETTING**

### **Prehistoric Overview**

Over the past century numerous chronological sequences have been devised to understand cultural changes for various areas within southern California. Building on early studies and focusing on data synthesis, Wallace (1955, 1978) developed a prehistoric chronology for the southern California coastal region that is still widely used today and is applicable to coastal and many inland areas. Four periods are presented in Wallace's prehistoric sequence: Early Man, Milling Stone, Intermediate, and Late Prehistoric. As noted by Moratto (1984:159), Wallace's (1955) synthesis lacked chronological precision due to the lack of absolute dates at the time of its creation, but remains generally valid today.

In addition to Wallace's classic summary, a regional synthesis developed by Warren (1968) is referred to in the following discussion. This synthesis is supported by a larger archaeological database for southern California, which includes the advent and increased use of radiocarbon dating after the 1950s. Using the concepts of cultural ecology and cultural tradition, Warren (1968) proposed a series of six prehistoric traditions. Three of these traditions, the San Dieguito Tradition, Encinitas Tradition, and Campbell Tradition, correlate with Wallace's Early Man, Milling Stone, and Intermediate. The Chumash Tradition, Tatic Tradition (formerly "Shoshonean"), and Yuman Tradition are represented within Wallace's Late Prehistoric period. As noted further, these ecologically based traditions are applicable to specific regions within southern California.

Some revisions have been made to Wallace's 1955 synthesis using radiocarbon dates and projectile point assemblages (e.g., Koerper and Drover 1983; Koerper et al. 2002; Mason and Peterson 1994). The summary of prehistoric chronological sequences for southern California coastal and near-coastal areas presented below is a composite of information in Wallace (1955) and Warren (1968), as well as more recent studies, including Koerper and Drover (1983). The chronology formulated by Koerper and Drover (1983) is based on the results of their excavations at a multi-component village site (CA-ORA-119-A) near the University of California, Irvine in Orange County. Diagnostic artifacts, particularly projectile points, and other cultural material produced evidence from the late Milling Stone, Intermediate, Late Prehistoric, and early Historic periods.

#### *Early Man Period/San Dieguito/Paleo-Coastal (ca. 10,000–6000 B.C.)*

When Wallace defined the Early Man period in the mid-1950s, there was little evidence of human presence on the southern California coast prior to 6000 B.C. Archaeological work in the intervening years has identified numerous older sites dating prior to 10,000 years ago, including ones on the coast and Channel Islands (e.g., Erlandson 1991; Johnson et al. 2002; Moratto 1984; Rick et al. 2001:609). The earliest accepted dates for occupation are from two of the northern Channel Islands, located off the coast from Santa Barbara. On San Miguel Island, Daisy Cave clearly establishes the presence of people in this area about 10,000 years ago (Erlandson 1991:105). On Santa Rosa Island, human remains have been dated from the Arlington Springs site to approximately 13,000 years ago (Johnson et al. 2002).

In what is now Orange County, there are sites dating from 9,000–10,000 years ago (Macko 1998a:41; Mason and Peterson 1994:55–57; Sawyer 2006). Recent data from coastal, as well as inland, sites during this period indicate that the economy was a diverse mixture of hunting and gathering, with a major emphasis on aquatic resources in many coastal areas (e.g., Jones et al. 2002) and on Pleistocene lakeshores in eastern San Diego County (see Moratto 1984:90–92). A Paleo-Coastal Tradition was

proposed and recently referenced to highlight the distinctive marine and littoral focus identified within the southern California coastal archaeological record prior to the emergence of the Encinitas Tradition during the succeeding Milling Stone period (Mason and Peterson 1994:57–58; Moratto 1984:104). At coastal sites, there is abundant evidence that marine resources such as fish, marine mammals, and shellfish were exploited during the Paleo-Coastal period.

At near-coastal and inland sites, it appears that an emphasis on hunting may have been greater during the Early Man period than in later periods, although few Clovis-like or Folsom-like fluted points have been found in southern California (e.g., Dillon 2002; Erlandson et al. 1987). Common elements in many San Dieguito Tradition sites include leaf-shaped bifacial projectile points and knives, stemmed or shouldered projectile points (e.g., Silver Lake and Lake Mojave series), scrapers, engraving tools, and crescents (Warren 1967:174–177; Warren and True 1961:251–254). Use of the atlatl (spear-throwing stick) during this period facilitated launching spears with greater power and distance. Subsistence patterns shifted around 6000 B.C. coincident with the gradual desiccation associated with the onset of the Altithermal, a warm and dry period that lasted for about 3,000 years. After 6000 B.C., a greater emphasis was placed on plant foods and small animals.

### *Milling Stone Period (ca. 6000–3000/1000 B.C.)*

The Milling Stone period of Wallace (1955, 1978) and Encinitas Tradition of Warren (1968) are characterized by an ecological adaptation to collecting, and by the dominance of the principal ground stone implements generally associated with the horizontal motion of grinding small seeds; namely, milling stones (metates, slabs) and hand stones (manos, mullers), which are often intentionally shaped. Milling stones occur in large numbers for the first time, and are even more numerous near the end of this period. As testified by their toolkits and shell middens in coastal sites, people during this period practiced a mixed food procurement strategy. Subsistence patterns varied somewhat as groups became better adapted to their regional or local environments.

Milling Stone period sites are common in the southern California coastal region between Santa Barbara and San Diego, and at many inland locations including the Prado Basin in western Riverside County and the Pauma Valley in northeastern San Diego County (e.g., True 1958; Herring 1968; Langenwalter and Brock 1985; Sawyer and Brock 1999; Sutton 1993). Wallace (1955, 1978) and Warren (1968) relied on several key coastal sites to characterize the Milling Stone period and Encinitas Tradition, respectively. These include the Oak Grove Complex in the Santa Barbara region, Little Sycamore in southwestern Ventura County, Topanga Canyon in the Santa Monica Mountains, and at La Jolla in San Diego County. The Encinitas Tradition was proposed to extend southward into San Diego County where it apparently continued alongside the following Campbell Tradition, which occurred primarily in the Santa Barbara–Ventura County region beginning around 3000 B.C.

Of the numerous Milling Stone period sites identified in the region, the most well known is the Irvine site (CA-ORA-64), which has occupation levels dating between circa 6000–4000 B.C. (Drover et al. 1983; Macko 1998b). Along coastal Orange County, Koerper and Drover (1983:11) mark the transition at the end of the Milling Stone around 1000 B.C., while Wallace’s mid-1950s scheme has the period ending at 3000 B.C. Based on radiocarbon dates from the Newport Coast Archaeological Project project, Mason and Peterson (1994) propose a timeline for the Milling Stone similar to that advanced by Koerper and Drover. The chronological schemes advanced for coastal Orange County also apply to many southern California near-coastal and inland areas.

During the Milling Stone period and Encinitas Tradition, stone chopping, scraping, and cutting tools were abundant, and generally made from locally available raw material. Projectile points, which are rather large and generally leaf-shaped, and bone tools such as awls were generally rare. The large points are

associated with the spear, and probably with an atlatl. Items made from shell, including beads, pendants, and abalone dishes, are generally rare as well. Evidence of weaving or basketry is present at a few sites. Kowta (1969) attributes the presence of numerous scraper-planes in Milling Stone sites to the preparation of agave or yucca for food or fiber. The mortar and pestle, associated with the vertical motion of pounding foods, such as acorns, were introduced during the Milling Stone period, but are not common.

Two types of artifacts that are considered diagnostic of the Milling Stone period are the cogged stone and the discoidal, most of which have been found within sites dating between 4000–1000 B.C. (Moratto 1984:149). The cogged stone is a ground stone object that has gear-like teeth on the perimeter and is produced from a variety of materials. The function of cogged stones is unknown, but they have been attributed ritualistic or ceremonial uses by several scholars (Dixon 1968:64–65; Eberhart 1961:367). Similar to cogged stones, discoidals are found in the archaeological record subsequent to the introduction of the cogged stone. Cogged stones and discoidals were often purposefully buried or “cached.” They are most common in sites along the coastal drainages from southern Ventura County southward and are particularly abundant at some Orange County sites, although a few specimens have been found inland at Cajon Pass (Dixon 1968:63; Moratto 1984:149). Discoidals and cogged stones have been found together at some Orange County sites, such as CA-ORA-83/86/144 (Van Bueren et al. 1989:772), CA-ORA-950 (Ron Bissell, personal communication 1999), and Los Cerritos Ranch (Dixon 1975 in Moratto 1984:150).

Koerper and Drover (1983) suggest that Milling Stone period sites reflect migratory settlement patterns of hunters and gatherers who used marine resources during the winter and inland resources the remainder of the year. More recent research indicates that residential bases or camps were moved to resources in a seasonal round (de Barros 1996; Koerper et al. 2002; Mason et al. 1997), or that some sites were occupied year-round with portions of the village population leaving at certain times of the year to exploit available resources (Cottrell and Del Chario 1981). Regardless of settlement system, it is clear that subsistence strategies during the Milling Stone period included hunting small and large terrestrial mammals, marine mammals, and birds; collecting shellfish and other shore species; extensive use of seed and plant products; the processing of yucca and agave; and near-shore fishing with barbs or gorges (Kowta 1969; Reinman 1964:47–80). As evidenced by the abundant milling equipment found at these sites throughout the region, the processing of small seeds was an important component of their subsistence practices.

Characteristic mortuary practices during the Milling Stone period or Encinitas Tradition include extended and loosely flexed burials interred beneath cobble or milling stone cairns. Some burials contain red ochre and few grave goods, such as shell beads and milling stones. “Killed” milling stones, exhibiting holes, may occur in the cairns. Secondary burials are common in the Los Angeles County area, while flexed burials oriented along a north-south axis are common in Orange and San Diego counties. Evidence of wattle-and-daub structures and walls have been identified at some sites in the San Joaquin Hills and Newport Coast area spanning all cultural periods (Koerper 1995; Mason et al. 1991; Mason et al. 1992; Mason et al. 1993; Sawyer 2006; Strudwick 2004).

A potentially unique trait of the Milling Stone period, isolated to a small region of coastal Orange County, is the presence of a rudimentary ceramic industry involving the creation of fired clay effigies, figurines, and small, crude, thick-walled pottery vessels (Drover 1971, 1975; Drover et al. 1983; Macko 1998b; Sawyer and Koerper 2006). The figurines have been found at the Irvine site (CA-ORA-64) on Newport Bay, and a collapsed rockshelter site (CA-ORA-1405-B) within Muddy Canyon.

### *Intermediate Period (ca. 3000/1000 B.C.–A.D. 500/650)*

Wallace’s Intermediate period and Warren’s Campbell Tradition in Santa Barbara, Ventura, and parts of Los Angeles counties date from approximately 3000 B.C. to A.D. 500. This era is characterized by a shift toward a hunting and maritime subsistence strategy along with a wider use of plant foods. The Campbell



Tradition (Warren 1968) incorporates Rogers' (1929) Hunting Culture and related expressions along the Santa Barbara coast. In the San Diego region, the Encinitas Tradition (Warren 1968) and the La Jolla Culture (Moriarty 1966; Rogers 1939, 1945) persist with little change during this time.

Temporal placement of the Intermediate period is generally recognized as ranging between 3000 B.C. and A.D. 500 (Wallace 1955; Warren 1968). In Orange County, researchers have estimated that the Intermediate period began around 1000 B.C. and lasted until circa A.D. 650 (3000–1300 B.P.) (Koerper and Drover 1983:11; Mason and Peterson 1994). A more recent evaluation, based on some 1,300 calibrated radiocarbon dates from sites in Orange County, suggests a date of 1400 B.C. for the start of the Intermediate, marked by single-piece circular fishhooks and coinciding with the transition from the Middle to Late Holocene (Koerper et al. 2002:67–68). Another researcher sees the Intermediate not as a cultural period, but as a transition between the Milling Stone and the later Late Prehistoric period, based on his investigations at sites in the Bonita Mesa area near upper Newport Bay (Peterson 2000). This idea may simply reflect subregional or area-specific trends at sites in and around Newport Bay rather than a more general depiction of the cultural period dynamics in Orange County and the greater southern California region.

During the Intermediate period, there was a pronounced trend toward greater adaptation to regional or local resources. For example, the remains of fish, land mammals, and marine mammals are increasingly abundant and diverse in sites along the California coast in the referenced region. Related chipped stone tools suitable for hunting are more abundant and diversified, and shell fishhooks became part of the toolkit during this period. Larger knives, a variety of flake scrapers, and drill-like implements are common in deposits dating to this period. Projectile points include large side-notched, stemmed, and lanceolate or leaf-shaped forms. Koerper and Drover (1983) consider Gypsum Cave and Elko series points, which have a wide distribution in the Great Basin and Mojave deserts between circa 2000 B.C. and A.D. 500, to be diagnostic of this period. Bone tools, including awls, were more numerous than in the preceding period, and the use of asphaltum adhesive was common as well.

Mortars and pestles became more common during this period, gradually replacing manos and metates as milling stone implements. In addition, hopper mortars and stone bowls, including steatite vessels, appear to have entered the toolkit at this time. This shift appears to be a correlate of a diversification in subsistence resources. Many archaeologists believe this change in milling stones signals a shift away from the processing and consuming of hard seed resources to the increasing importance of the acorn (e.g., Glassow et al. 1988; True 1993). It has been argued that mortars and pestles may have been used initially to process roots (e.g., tubers, bulbs, and corms associated with marshland plants), with acorn processing beginning at a later point in prehistory (Glassow 1997:86) and continuing to European contact.

Characteristic mortuary practices during the Intermediate period include fully flexed burials placed face down or face up and oriented toward the north or west (Warren 1968:2–3). Red ochre is common, and abalone shell dishes infrequent. Interments sometimes occur beneath cairns or broken artifacts. Shell, bone and stone ornaments, including charmstones, were more common than in the preceding Encinitas Tradition. Some later sites include olive shell (*Olivella* spp.) and steatite beads, mortars with flat bases and flaring sides, and a few small points. The broad distribution of steatite from the Channel Islands and obsidian from distant inland regions, among other items, attest to the growth of trade, particularly during the later part of this period.

#### *Late Prehistoric Period (ca. A.D. 500/650–A.D. 1769)*

Wallace (1955, 1978) places the beginning of the Late Prehistoric period around A.D. 500. In Orange County, the start of this period is recognized at a slightly later date, circa A.D. 650 (Koerper and Drover

1983; Mason and Peterson 1994). In all chronological schemes for southern California, the Late Prehistoric period lasts until European contact in A.D. 1769.

During the Late Prehistoric period, there was an increase in the use of plant food resources in addition to an increase in land and marine mammal hunting. There was a concomitant increase in the diversity and complexity of material culture during this period, demonstrated by more classes of artifacts. The recovery of a greater number of small, finely chipped projectile points, usually stemless with convex or concave bases, suggests an increased utilization of the bow and arrow rather than the atlatl and dart for hunting. In Orange County, Cottonwood series triangular projectile points in particular are diagnostic of this period (Koerper and Drover 1983). Other items include steatite cooking vessels and containers, the increased presence of smaller bone and shell circular fishhooks, perforated stones, arrow shaft straighteners made of steatite, a variety of bone tools, and personal ornaments made from shell, bone, and stone. There is also an increased use of asphaltum for waterproofing and as an adhesive.

Late Prehistoric period sites contain beautiful and complex objects of utility, art, and decoration. Ornaments include drilled whole venus clam (*Chione* spp.) and drilled abalone. Steatite effigies become more common, with scallop (*Pecten* spp. and *Argopecten* spp.) shell rattles common in middens. In Orange County, for example, scallop shell rattles are concentrated in the Late Prehistoric midden at CA-ORA-119A, and other time-sensitive artifacts, including abalone ornaments and drilled venus clam shells, present (Koerper and Drover 1983:19–20). Much of the rock art found today in the Chumash sphere is thought to date to this period (Whitley 2000:41). Mortuary customs were elaborate, including cremation and interment, with abundant grave goods.

By A.D. 1000, fired clay smoking pipes and ceramic vessels began to appear at some sites (Meighan 1954; Warren 1984). The scarcity of pottery in coastal and near-coastal sites implies ceramic technology was not well developed in that area, or that ceramics were obtained by trade with neighboring groups to the south and east. The lack of widespread pottery manufacture is usually attributed to the high quality of tightly woven and watertight basketry that functioned in the same capacity as ceramic vessels.

Another feature typical of Late Prehistoric period occupation is an increase in the frequency of obsidian imported from the Obsidian Butte source in Imperial County. Obsidian Butte was initially exploited ca. A.D. 1000 after its exposure by the receding waters of Holocene Lake Cahuilla (Wilke 1978). A Late Prehistoric period component of the Elsinore site (CA-RIV-2798-A) produced two flakes that originated from Obsidian Butte (Grenda 1997:255). Although about 16 percent of the debitage at the Peppertree site (CA-RIV-463) at Perris Reservoir is obsidian, no sourcing study was done (Wilke 1974:61). The site contains a late Intermediate to Late Prehistoric period component and it is assumed that most of the obsidian originated from Obsidian Butte. In the earlier Milling Stone and Intermediate periods, most of the obsidian found at sites within Orange County and many inland areas came from northern sources, primarily the Coso volcanic field. This also appears to be the case within Prado Basin and other interior areas that have yielded obsidian (e.g., Grenda 1995:59; Ta'kiran 1997:46). The presence of Grimes Canyon (Ventura County) fused shale at southern California archaeological sites is also thought to be typical of the Late Prehistoric period (Demcak 1981; Hall 1988).

During this period, there was an increase in population size accompanied by the advent of larger, more permanent villages (Wallace 1955:223). Large populations and, in places, high population densities, are characteristic, with some coastal and near-coastal settlements containing as many as 1,500 people. Many of the larger settlements were permanent villages where people resided year-round. The populations of these villages may have also increased seasonally.

In Warren's (1968) cultural ecological scheme, the period between A.D. 500 and European contact is divided into three regional patterns. The Chumash Tradition is present mainly in the region of Santa Barbara and Ventura Counties; the Takic or Numic Tradition in the Los Angeles, Orange, and western

Riverside Counties region; and the Yuman Tradition in the San Diego region. The seemingly abrupt changes in material culture, burial practices, and subsistence focus at the beginning of the Late Prehistoric period are considered to be the result of a migration to the coast of peoples from inland desert regions to the east. In addition to the small triangular and triangular side-notched points similar to those found in the desert regions in the Great Basin and Lower Colorado River, Colorado River pottery and the introduction of cremation in the archaeological record are diagnostic of the Yuman Tradition in the San Diego region. This combination certainly suggests a strong influence from the Colorado Desert region.

In Los Angeles, Orange, and western Riverside counties, similar changes (introduction of cremation, pottery, and small triangular arrow points) are thought to have resulted from Takic migration to the coast from inland desert regions. This Takic or Numic Tradition was formerly referred to as the “Shoshonean wedge” or “Shoshonean intrusion” (Warren 1968). This terminology, used originally to describe a Uto-Aztec language group, is generally no longer employed in order to avoid confusion with ethnohistoric and modern Shoshonean groups who spoke Numic languages (Heizer 1978:5; Shipley 1978:88, 90). Modern Gabrielino/Tongva, Juaneño, and Luiseño in this region are considered to be the descendants of the prehistoric Uto-Aztec, Takic-speaking populations that settled along the California coast during this period, or perhaps somewhat earlier.

## Ethnographic Overview

The project area is in a region historically occupied by the Gabrielino. The archaeological record indicates that the Gabrielino arrived in the Los Angeles Basin around 500 B.C. The name “Gabrielino” denotes those people who were administered by the Spanish from the San Gabriel Mission, which included people from the Gabrielino area proper as well as other social groups (Bean and Smith 1978; Kroeber 1925). Therefore, in the post-Contact period, the name does not necessarily identify a specific ethnic or tribal group. The names by which Native Americans in southern California identified themselves have, for the most part, been lost. Many contemporary Gabrielino identify themselves as descendents of the indigenous people living across the plains of the Los Angeles Basin and adjacent areas and use the native term Tongva to describe themselves (King 1994). This term is used in the remainder of this section to refer to the pre-contact inhabitants of the Los Angeles Basin and their descendents. Surrounding native groups included the Chumash and Tataviam to the northwest, the Serrano and Cahuilla to the northeast, and the Juaneño and Luiseño to the southeast.

Tongva lands encompassed the greater Los Angeles Basin and three Channel Islands: San Clemente, San Nicolas, and Santa Catalina. The Tongva established large, permanent villages in the fertile lowlands along rivers and streams, and in sheltered areas along the coast, stretching from the foothills of the San Gabriel Mountains to the Pacific Ocean. A total tribal population has been estimated of at least 5,000 (Bean and Smith 1978), but recent ethnohistoric work suggests a number approaching 10,000 (O’Neil 2002). Houses constructed by the Tongva were large, circular, domed structures made of willow poles thatched with tule that could hold up to 50 people (Bean and Smith 1978). Other structures served as sweathouses, menstrual huts, ceremonial enclosures, and probably communal granaries. Cleared fields for races and games, such as lacrosse and pole throwing, were created adjacent to Tongva villages (McCawley 1996). Archaeological sites composed of villages with various-sized structures have been identified.

The Gabrielino village of *Puvunga* (various spellings) is believed to have been located at Rancho Los Alamitos, possibly at present day Bixby Hill (Cleland et al. 2007:31, McCawley 1996:71). This places the village across the San Gabriel River and Alamitos Bay from the project area. *Puvunga* is reported to be the birthplace of *Chinigchinich* and a ritual center for the Gabrielino (McCawley 1996:69). McCawley (1996:71) also describes the reported Gabrielino settlement of *Motuuchey* near the present location of the NWS Seal Beach, approximately 1 mile southeast of the project area.

The Tongva subsistence economy was centered on gathering and hunting. The surrounding environment was rich and varied, and the tribe exploited mountains, foothills, valleys, deserts, riparian, estuarine, and open and rocky coastal eco-niches. Like that of most native Californians, acorns were the staple food (an established industry by the time of the early Intermediate Period). Acorns were supplemented by the roots, leaves, seeds, and fruits of a wide variety of flora (e.g., islay, cactus, yucca, sages, and agave). Freshwater and saltwater fish, shellfish, birds, reptiles, and insects, as well as large and small mammals, were also consumed (Bean and Smith 1978:546; Kroeber 1925; McCawley 1996).

A wide variety of tools and implements were used by the Tongva to gather and collect food resources. These included the bow and arrow, traps, nets, blinds, throwing sticks and slings, spears, harpoons, and hooks. Groups residing near the ocean used oceangoing plank canoes and tule balsa canoes for fishing, travel, and trade between the mainland and the Channel Islands (McCawley 1996).

Tongva people processed food with a variety of tools, including hammer stones and anvils, mortars and pestles, manos and metates, strainers, leaching baskets and bowls, knives, bone saws, and wooden drying racks. Food was consumed from a variety of vessels. Catalina Island steatite was used to make ollas and cooking vessels (Blackburn 1963; Kroeber 1925; McCawley 1996).

At the time of Spanish contact, the basis of Tongva religious life was the *Chinigchinich* cult, centered on the last of a series of heroic mythological figures. *Chinigchinich* gave instruction on laws and institutions, and also taught the people how to dance, the primary religious act for this society. He later withdrew into heaven, where he rewarded the faithful and punished those who disobeyed his laws (Kroeber 1925). The *Chinigchinich* religion seems to have been relatively new when the Spanish arrived. It was spreading south into the Southern Takic groups even as Christian missions were being built and may represent a mixture of native and Christian belief and practices (McCawley 1996).

Deceased Tongva were either buried or cremated, with inhumation more common on the Channel Islands and the neighboring mainland coast and cremation predominating on the remainder of the coast and in the interior (Harrington 1942; McCawley 1996). Cremation ashes have been found in archaeological contexts buried within stone bowls and in shell dishes (Ashby and Winterbourne 1966), as well as scattered among broken ground stone implements (Cleland et al. 2007). Archaeological data such as these correspond with ethnographic descriptions of an elaborate mourning ceremony that included a wide variety of offerings, including seeds, stone grinding tools, otter skins, baskets, wood tools, shell beads, bone and shell ornaments, and projectile points and knives. Offerings varied with the sex and status of the deceased (Johnston 1962; McCawley 1996; Reid 1926). At the behest of the Spanish missionaries, cremation essentially ceased during the post-Contact period (McCawley 1996).

## Historic Overview

Post-Contact history for the state of California is generally divided into three periods: the Spanish Period (1769–1822), Mexican Period (1822–1848), and American Period (1848–present). Although Spanish, Russian, and British explorers visited the area for brief periods between 1529 and 1769, the Spanish Period in California begins with the founding of Mission San Diego de Alcalá in 1769. Independence from Spain in 1821, which took effect in California the following year, marks the beginning of the Mexican Period, and the signing of the Treaty of Guadalupe Hidalgo in 1848, ending the Mexican–American War, signals the beginning of the American Period when California became a territory of the United States.

### *Spanish Period (1769–1822)*

Spanish explorers made sailing expeditions along the coast of southern California between the mid-1500s and mid-1700s. In search of the legendary Northwest Passage, Juan Rodríguez Cabrillo stopped in 1542

at present-day San Diego Bay. With his crew, Cabrillo explored the shorelines of present Catalina Island as well as San Pedro and Santa Monica Bays. Much of the present California and Oregon coastline was mapped and recorded in the next half-century by Spanish naval officer Sebastián Vizcaíno. Vizcaíno's crew also landed on Santa Catalina Island and at San Pedro and Santa Monica Bays, giving each location its long-standing name. The Spanish crown laid claim to California based on the surveys conducted by Cabrillo and Vizcaíno (Bancroft 1885; Gumprecht 1999).

More than 200 years passed before Spain began the colonization and inland exploration of Alta California. The 1769 overland expedition by Captain Gaspar de Portolá marks the beginning of California's Historic period, occurring just after the King of Spain installed the Franciscan Order to direct religious and colonization matters in assigned territories of the Americas. With a band of 64 soldiers, missionaries, Baja (lower) California Native Americans, and Mexican civilians, Portolá established the Presidio of San Diego, a fortified military outpost, as the first Spanish settlement in Alta California. In July of 1769, while Portolá was exploring southern California, Franciscan Fr. Junípero Serra founded Mission San Diego de Alcalá at Presidio Hill, the first of the 21 missions that would be established in Alta California by the Spanish and the Franciscan Order between 1769 and 1823.

The Portolá expedition first reached the present-day boundaries of Los Angeles in August 1769, thereby becoming the first Europeans to visit the area. Father Crespi named "the campsite by the river Nuestra Señora la Reina de los Angeles de la Porciúncula" or "Our Lady the Queen of the Angeles of the Porciúncula." Two years later, Friar Junípero Serra returned to the valley to establish a Catholic mission, the Mission San Gabriel Arcángel, on September 8, 1771 (Kyle 2002).

A major emphasis during the Spanish Period in California was the construction of missions and associated presidios to integrate the Native American population into Christianity and communal enterprise. Incentives were also provided to bring settlers to pueblos or towns, but just three pueblos were established during the Spanish Period, only two of which were successful and remain as California cities (San José and Los Angeles). Several factors kept growth within Alta California to a minimum, including the threat of foreign invasion, political dissatisfaction, and unrest among the indigenous population.

### *Mexican Period (1822–1848)*

After more than a decade of intermittent rebellion and warfare, New Spain (Mexico and the California territory) won independence from Spain in 1821. In 1822, the Mexican legislative body in California ended isolationist policies designed to protect the Spanish monopoly on trade, and decreed California ports open to foreign merchants (Dallas 1955).

Extensive land grants were established in the interior during the Mexican Period, in part to increase the population inland from the more settled coastal areas where the Spanish had first concentrated their colonization efforts. Nine ranchos were granted between 1837 and 1846 in the future Orange County (Middlebrook 2005). Among the first ranchos deeded within the future Orange County were Manuel Nieto's Rancho Las Bolsas (partially in future Los Angeles County), granted by Spanish Governor Pedro Fages in 1784, and the Rancho Santiago de Santa Ana, granted by Governor José Joaquín Arrillaga to José Antonio Yorba and Juan Pablo Peralta in 1810 (Hallan-Gibson 1986). The secularization of the missions following Mexico's independence from Spain resulted in the subdivision of former mission lands and establishment of many additional ranchos.

During the supremacy of the ranchos (1834–1848), landowners largely focused on the cattle industry and devoted large tracts to grazing. Cattle hides became a primary southern California export, providing a commodity to trade for goods from the east and other areas in the United States and Mexico. The number of nonnative inhabitants increased during this period because of the influx of explorers, trappers, and



ranchers associated with the land grants. The rising California population contributed to the introduction and rise of diseases foreign to the Native American population, who had no associated immunities.

### *American Period (1848–Present)*

War in 1846 between Mexico and the United States precipitated the Battle of Chino, a clash between resident Californios and Americans in the San Bernardino area. The Mexican–American War ended with the Treaty of Guadalupe Hidalgo in 1848, ushering California into its American Period.

California officially became a state with the Compromise of 1850, which also designated Utah and New Mexico (with present-day Arizona) as U.S. Territories (Waugh 2003). Horticulture and livestock, based primarily on cattle as the currency and staple of the rancho system, continued to dominate the southern California economy through 1850s. The Gold Rush began in 1848, and with the influx of people seeking gold, cattle were no longer desired mainly for their hides but also as a source of meat and other goods. During the 1850s cattle boom, rancho vaqueros drove large herds from southern to northern California to feed that region’s burgeoning mining and commercial boom. Cattle were at first driven along major trails or roads such as the Gila Trail or Southern Overland Trail, then were transported by trains when available. The cattle boom ended for southern California as neighbor states and territories drove herds to northern California at reduced prices. Operation of the huge ranchos became increasingly difficult, and droughts severely reduced their productivity (Cleland 2005).

### *History of Seal Beach*

In the mid-nineteenth century, German immigrants referred to as German Burghers purchased a 1,165-acre parcel of land from Rancho Los Alamitos. They called this land Anaheim, meaning “home by the [Santa Ana] river (Dumke 1944:113).” The first port they established at Alamitos Bay was destroyed by flooding from the San Gabriel River in 1867. It was imperative that a new port be established in order for ships to supply the Germans with building materials and to distribute the wine, wool, produce, and other goods that they produced. Soon after the flood, the Germans established a new port to the southeast in present day Seal Beach called Anaheim Landing and Bay. Here they were able to exchange goods with the large ships that came down from San Francisco and anchored out at sea, and bring back much needed supplies, such as lumber, to the Landing. Wagon trains would also come through the area to exchange with the ships. Families often came along on these wagon trips to escape the heat and enjoy the bay. No stores were located near the Landing at this time, so water had to be brought in from the San Gabriel River. Still, the beach continued to attract families with young children (Alioto 2005).

When the Southern Pacific Railroad (SPRR) was routed through the area in 1875, the popularity of shipping began to fade. Farmers could now send their goods across the land on rail. The old shipping warehouse was converted into a pavilion for summer vacationers who enjoyed basking on the beach, swimming in the bay, and rowing out to the estuary behind the Landing to dig up clams. Eventually, the area surrounding Anaheim Landing became known as Bay City. An 1896 USGS Las Bolsas quadrangle shows a group of approximately 20 buildings organized into two lines around Anaheim Landing, and depicts the vast reaches of the salt marsh and estuaries into land that is now NWS Seal Beach.

In 1901 Phillip Stanton (also known as “the father of Seal Beach”) purchased a large portion of land from Hellman Ranch, and a smaller portion from Bixby Ranch. He soon sold one of his plots to John C. Ord, a Los Alamitos business man who decided to move his general store to an area that is now the southwest corner of Main Street and Electric Avenue in Seal Beach. Ord became the first permanent resident of Bay City (Alioto 2005). In 1904, the Big Red Cars of the Pacific Electric Railway arrived in Bay City. A year later, the track would be connected to the Long Beach line when a trestle was constructed across the mouth of Alamitos Bay (Scott 1989). This eastern extension was a direct route to Alamitos Bay, Bay

City, Anaheim Landing, Huntington Beach, and finally Newport Beach (*Los Angeles Times* 1904). With the Big Red Cars came more visitors and a growing interest in real estate.

In 1915, Bay City was formally incorporated, at which time its name was changed to Seal Beach (Alioto 2005). It was Stanton's aim to turn Seal Beach into "the Coney Island of the Pacific." A year later, the beachside Joy Zone amusement park was opened along the pier. The original pier from 1906 was widened and reinforced to accommodate the droves of people that showed up every week (Harris 2008). The Joy Zone included a wooden rollercoaster called the Derby, the Jewel City Café, ballroom dancing, a bowling alley, and other boardwalk entertainment. Between 1916 and 1930, additional Pacific Electric Red Car lines were added to accommodate the thousands of visitors that came to the Joy Zone every weekend (Alioto 2005).

In the 1920s, oil drilling had become a major focus for Seal Beach and its surrounding areas. The Seal Beach Oil Field (SBOF) was discovered in 1924 when the "Bryant" well was drilled by Shell Oil Company. The SBOF is located between the Long Beach and Huntington Beach Oil Fields, approximately 0.5 mile inland.

The Great Depression would ultimately be the demise of the Joy Zone. With unemployment rates soaring in 1929, people were no longer willing to spend their money on entertainment (Alioto 2005). By 1938, the old 1906 pier had acquired extensive rot damage and was no longer structurally sound. As a result, it was demolished that year (*Los Angeles Times* 1938). A new pier would not be constructed until 1985 (Lindgren 1985). Seal Beach's image was quickly altered from a popular weekend party town, to a residential, family-oriented, and business development community. These changes were ushered in first by the Great Depression and continued with the disappearance of gambling halls and bath houses in the 1940s. In 1950, the Pacific Electric line passenger Red Cars stopped running, and freight Red Cars stopped in 1954. Residential development boomed in Seal Beach from the mid-1950s through the 1970s.

Drilling and oil field development continued through the mid-1950s when production in the area began to decline (Hesson and Olilang 1990). Offshore oil production began in 1954 in the Belmont Oil Field, located approximately 1 mile south of the city of Seal Beach on State Leases PRC 186 and 3095.1. Drilling was initiated by the Monterey Oil Company from the first human-made, rock-filled drilling station. The extension to parcel 3095.1 was obtained by Standard Oil Company of California (later to become Chevron) in 1964. Esther Island was constructed by Standard Oil Company in 1965. It produced 30.1 million barrels of oil, 15.2 billion cubic feet of gas, and 20.8 million barrels of water before being destroyed by violent storms in 1983. Platform Esther was constructed on top of the remains of Esther Island with the aim of returning certain wells to production while abandoning others. Chevron never returned the platform to production, and subsequently transferred it to Unocal during a more extensive trade in December 1988 (Adhock and Trujillo 1993). Evidence of the city's industrial past is still present but the city today is most associated with its picturesque beach and the naval weapons station (NWS Seal Beach).

As previously stated, the project area was developed as a Los Angeles Department of Water and Power steam power plant in 1925. The residence at the northern corner of the project area was constructed independent of the power plant ca. 1956 by Russell B. Grotemat, a former sea captain who developed the nearby Seal Beach Trailer Park. The power plant was demolished in 1967 and the site underwent environmental clean-up and remediation in the mid-1980s, when the majority of the project area was graded flat.

## BACKGROUND RESEARCH

### Literature Search

On April 28, 2011, SWCA Cultural Resources Senior Project Manager Kevin Hunt requested a search of the California Historical Resources Information System (CHRIS) at the SCCIC, located on the campus of California State University, Fullerton. SWCA received the search results on May 9, 2011. The search included any previously recorded cultural resources and investigations within a 0.5-mile radius of the project area. The CHRIS search also included a review of the NRHP, the CRHR, the California Points of Historical Interest list, the California Historical Landmarks (CHL) list, the Archaeological Determinations of Eligibility list, and the California State Historic Resources Inventory (HRI) list. The records search also included a review of all available historical USGS 7.5- and 15-minute quadrangles. A letter from the SCCIC summarizing the results of the records search, and a bibliography of prior cultural resources studies, are provided in Appendix A.

### *Previous Cultural Resources Studies within 0.5 Mile of the Project Area*

Twenty-three cultural resources studies have been previously conducted within 0.5 mile of the project area (Table 1). Of these, three included at least a portion of the project area (OR-00481, OR-002033, and Underbrink 2005). Brief summaries of these studies are provided in the paragraphs that follow. An additional 10 “unmappable” studies were also conducted within areas shown on the Los Alamitos, California and Seal Beach, California quadrangles. See Appendix A for a complete bibliography from the SCCIC.

**Table 1.** Previous Cultural Resources Studies within 0.5 Mile of the Project Area

Report Number	Title of Study	Author	Year	Proximity to the Project Area
LA-3583	The Los Angeles Basin and Vicinity: A Gazetteer and Compilation of Archaeological Site Information	Bucknam, Bonnie M.	1974	Outside
LA-04266	A Deeply –buried Human Skull and Recent Stratigraphy at the Present Mouth of the San Gabriel River, Seal Beach, California	Brooks, Sheilagh T.	1960	Outside
LA-10483	Cultural Resources Assessment for the Alamitos Bay Marina Rehabilitation Project, City of Long Beach, Los Angeles County, California	Fulton, Terri	2009	Outside
OR-00481	Archaeological Survey Report: The 9+ Acre L.A. Department of Water and Power Property Located at the Corner of 1 <sup>st</sup> and Ocean Avenue in the City of Seal Beach, CA	Archaeological Associates	1979	Within
OR-00493	Archaeological Survey Report: the Hellman Property in Seal Beach	Anonymous	1980	Outside
OR-00639	Archaeological Test Report on the Hellman Property Located in Seal Beach	Anonymous	1981	Outside
OR-01290	Cultural Resources Survey Report for the Unocal Property at 99 Marina Drive Seal Beach, California	De Barros, Philip, and Roger D. Mason	1993	Outside
OR-01301	Historical Review and Archaeological Report for the Unocal On-shore Facility at 99 Marina Drive in Seal Beach, California in Two Parts	Kelsey, Harry, and Nicholas Magalousis	1993	Outside
OR-01348	Addendum to Cultural Resources Survey Report for the Unocal Property at 99 Marina Drive Seal Beach, California	De Barros, Philip, and Roger D. Mason	1993	Outside

**Table 1.** Previous Cultural Resources Studies within 0.5 Mile of the Project Area

Report Number	Title of Study	Author	Year	Proximity to the Project Area
OR-01581	Cultural Resources Assessment of the Hellman Ranch, Seal Beach, California	Whitney-Desautels, Nancy A.	1997	Outside
OR-01608	A Research Design and Investigation Program for Test Level Evaluations of Archaeological Sites Located on the Hellman Ranch, City of Seal Beach, California	Stickel, Gary E.	1996	Outside
OR-01609	A Research Design for the Evaluation of Archaeological Sites Within the Hellman Ranch Specific Plan Area	York, Andrew, et al.	1997	Outside
OR-01610	An Archaeological Site Survey of the Hellman Ranch, City of Seal Beach, California	Stickel, Gary E.	1996	Outside
OR-01643	A Research Design for the Evaluation of Archaeological Sites Within the Hellman Ranch Specific Plan Area	York, Andrew, et al.	1997	Outside
OR-01644	A Research Design for the Evaluation of Archaeological Sites Within the Hellman Ranch Specific Plan Area	York, Andrew L., et al.	1997	Outside
OR-01816	A Research Design and Investigation Program for Test Level Evaluations of Archaeological Sites Located on the Hellman Ranch, City of Seal Beach, California	Stickel, Gary E.	1996	Outside
OR-01858	A Research Design for the Evaluation of Archaeological Sites Within the Hellman Ranch Specific Plan Area	York, Andrew L., and James H. Cleland	1997	Outside
OR-02033	Research Design for Evaluation of Coastal Archaeological Sites in Northern Orange County, California	Mason, Roger D.	1987	Overview that includes project area
OR-03562	Negative Archaeological Monitoring Report for the 400 Marina Drive Development Project, City of Seal Beach, CA	Strauss, Monica	2009	Outside
OR-03735	Due-diligence historical archaeological resources review, City of Seal Beach Sewer Capital Improvement Projects, City of Seal Beach, Orange County, California	Tang, Bai "Tom"	2008	Outside
OR-03762	Negative Archaeological Monitoring Report for the Hellman Ranch Tank Farm Replacement Project, City of Seal Beach, California	Ehringer, Candace	2009	Outside
OR-03821	Identification and Evaluation of Historic Properties City of Seal Beach Sewer Capital Improvements Projects (Southern Portion/Downtown Area) City of Seal Beach, Orange County, California	Tang, Bai, and Michael Hogan	2009	Outside
N/A*	Cultural Resources Records Search and Survey Report for the Ocean Place Project, Seal Beach, Orange County, California	Underbrink, Susan	2005	Within

\* This report was not on file at SCCIC but was provided to SWCA by RBF Consulting. SWCA forwarded the report to SCCIC.

OR-00481

Archaeological Associates conducted an archaeological survey of 9+ acres within the project area in 1979. The survey identified a marine shell scatter over the entire project area, as well as numerous remains of historic period structures including: two sets of trolley tracks, a dirt fill ramp from a former bridge abutment, foundations from the former Los Angeles Department of Water and Power steam generation plant, a scatter of historical building materials associated with the demolition of the generation plant, and the residence still present today. This study presented the results of exhaustive historical map research that indicate the project area is not composed of fill, but rather in prehistoric times was a "low

bluff overlooking the east end of Los Alamitos Bay.” Archaeological Associates (1979) identified the project area as a “probable location for a prehistoric aboriginal activity area.”

OR-02033

In 1987, Roger D. Mason of Scientific Resource Surveys, Inc., prepared *Research Design for Evaluation of Coastal Archaeological Sites in Northern Orange County, California* (Mason 1987). This overview study created a broad research design for known archaeological sites in northern Orange County. No site was identified within the current project area.

Underbrink 2005 (no SCCIC number)

In 2005, Susan Underbrink of Chambers Group, Inc., conducted a cultural resources study of nearly the entire current project area and including the commercial building located just outside the north-northwest corner of the current project area. Underbrink’s study included a records search and pedestrian survey. The study noted the presence of the buildings within the study area but did not consider them for CRHR eligibility. Aside from those buildings, the results of this study were negative for cultural resources.

### *Previously Recorded Cultural Resources within 0.5 Mile of the Project Area*

There are no previously recorded cultural resources located within the project area. The SCCIC records search indicates that there are five previously recorded cultural resources located within a 0.5-mile radius of the project area (Table 2). These include two prehistoric archaeological sites (P-19-000278 and P-30-001473), one historical cultural resource (P-19-186115; also recorded as HRI # 079355), one property listed on the California Points of Historical Interest (Seal Beach Red Car Station, P-30-162293), one property listed on the CRHR, and one property listed on the NRHP (Old Seal Beach City Hall, P-30-156069). None of these resources occur within the boundaries of the project area. The closest extant resource to the project area is the Long Beach Marina Stadium, designed and constructed for the 1932 Olympics as a rowing course and located approximately 0.25 mile north of the project area.

**Table 2.** Previously Recorded Cultural Resources within 0.5 Mile of the Project Area

Resource Number	Resource Description	NRHP/CRHR Eligibility Status	Recorder and Year	Proximity to Project Area
30-001473	Prehistoric: shell midden deposit	Insufficient data	J. Flahert and G. Stickel 1996	Outside: 0.50 mile northeast
19-186115	Historic: Long Beach Marine Stadium; 1932 Olympic event venue	CRHR listed; also CHL #1014	M. Lortie 1993, T. Fulton and P. Fulton 1999	Outside: 0.25 mile north
19-000278 (CA-LAN-278)	Prehistoric: village site	Unevaluated	True 1960	Outside: 0.50 mile northeast
30-162293	Historic: Seal Beach Red Car Station	On CA PHI (7L)	Insufficient data	Outside: 0.50 mile east
30-156069	Historic: Old Seal Beach City Hall	NRHP listed (2S3)	Insufficient data	Outside: 0.50 mile east

### *Historical Maps*

In addition to reviewing previously conducted studies and previously recorded site records, SWCA examined the project area on historical maps provided by the SCCIC, including 1896, 1941, and 1943



Downey, California, and 1896 and 1941 Las Bolsas, California 15-minute quadrangles. The 1896 Las Bolsas, California quadrangle shows that the project area was largely undeveloped at that time; however, by 1941 much development had occurred, especially along the shoreline where land was desirable. Similarly, the 1896 Downey, California map shows the area near project area as largely undeveloped; however by 1941 and 1943, a well developed and populated area was present. No buildings or structures are plotted on the 1896 maps. The 1941 Downey and Las Bolsas and 1943 Downey quadrangles all show that the area surrounding the project area had started to develop significantly. Several roads are now plotted and a grid was starting to take form. Many more buildings and structures were also plotted in the area at that time. The 1941 Las Bolsas and 1941 and 1943 Downey maps show that San Pedro Bay as a whole started to become heavily developed during that time, with densely developed areas including Long Beach and Seal Beach.

## Sacred Lands File Search and Initial Native American Coordination

SWCA initiated Native American coordination for this project on April 28, 2011. As part of the process of identifying cultural resources within or near the project area, we contacted the Native American Heritage Commission (NAHC) to request a review of the Sacred Lands File. The NAHC faxed a response on April 29, 2011 (Appendix B), and stated that the Sacred Lands File search “indicated that Native American cultural resources were identified within one-half mile of the area of potential affect (APE),” The NAHC also provided a contact list of 15 Native American individuals or tribal organizations who may have knowledge of cultural resources in or near the project area. We prepared and mailed letters (see Appendix B) to each of the NAHC-listed contacts on May 4, 2011, requesting information regarding any Native American cultural resources within or immediately adjacent to the project area.

As of July 20, 2011, SWCA has received three responses to the letters. Anthony Morales of the Gabrielino Tongva Tribal Council stated that anything along the coast and ocean is very sensitive. He mentioned nearby projects at Hellman Ranch and Seal Beach Naval Weapons Station, as well as the ethnographic village of Puvungna at California State University Long Beach. He is very concerned about the project and recommends full-time Native American monitoring by a Gabrielino. Mr. Morales repeated that the area is very sensitive for any ground disturbance.

Joyce Perry of the Juaneño Band of Mission Indians Acjachemen Nation said on behalf of herself and Chairperson David Belardes that the coastal area, including the project area, is very sensitive to her people. She mentioned sensitive sites at Hellman Ranch and Bolsa Chica and recommends archaeological and Native American monitoring.

Alfred Cruz of the Juaneño Band of Mission Indians said that he is concerned about the project. He stated the coastal area, especially along river mouths, was intensively used by Native Americans. He recommends full-time archaeological and Native American monitoring. He asked Kevin Hunt about sites that came up in the records search and noted that Native American people moved around a lot and used many areas; that the Juaneños were not only at Mission San Juan Capistrano but traveled to other areas including present-day Seal Beach. He informed SWCA that his group can provide monitoring services.

## CULTURAL RESOURCES SURVEY

### Methods

SWCA Cultural Resources Specialist Cheryle Hunt conducted a cultural resources survey of the project area on May 4, 2011. Intensive-level survey methods consisted of a pedestrian survey in parallel transects spaced no more than 10 meters apart over the entire project area, excluding the occupied residence, which was fenced separately. Transects were modified as necessary due to areas of dense vegetation. Ms. Hunt

examined the ground surface for artifacts (e.g., flaked stone tools, tool-making debris, stone milling tools, ceramics, fire-affected rock), ecofacts (marine shell and bone), soil discoloration that might indicate the presence of a cultural midden, soil depressions, and features indicative of the former presence of structures or buildings (e.g., standing exterior walls, postholes, foundations) or historical debris (e.g., metal, glass, ceramics). Ground disturbances such as burrows, cut banks, and drainages were visually inspected.

Ms. Hunt documented her fieldwork using field notes, digital photography, close-scale field maps, and aerial photographs. She took photographs of the project area with a Nikon Coolpix L18 digital camera. All field notes, photographs, and records related to the current study are on file at SWCA's Pasadena, California, office.

SWCA Architectural Historian Steven Treffers conducted an intensive-level survey of the historic period residence located within the project area on September 21, 2011. The field survey consisted of visual inspection of all features of the property. Mr. Treffers documented his fieldwork using field notes, digital photography, and aerial photographs. He took photographs of the subject building with a Sony Cyber-shot digital camera with 14.1 megapixels and 4x optical zoom. All field notes, photographs, and records related to the current study are on file at SWCA's Pasadena, California Office.

## Results

### *Archaeological Resources*

No archaeological resources were observed during the intensive-level cultural resources survey of the project area. Most of the project area consists of non-native, densely populated grasses and weeds (Figure 3). Ground visibility was approximately 5 percent in the entire project area (Figure 4).

The entire project area appears to have been subjected to repeated brushing over many years and the fairly level grade of the project area reflects the grading associated with the clean-up of the former DWP plant in the 1980s. Nevertheless, it is possible that intact archaeological deposits are present below ground that could be encountered during ground-disturbing construction activities. The DWP plant occupied only the southern half of the project area. Prehistoric deposits may still be present in the northern portion. Historic refuse deposits associated with the plant or other activities may be present throughout. Because cultural resources are located within 0.5 mile of the project area, and because of the project area's close proximity to the San Gabriel River, the project area should be considered moderately sensitive for the presence of buried cultural resources.

### *Built Environment Resources*

One historic built environment resource was identified, recorded, and evaluated as a result of the intensive-level field survey (Figure 5). The building is a single-family residence located in the north-northeast corner of the project area and is associated with an adjacent commercial boat sales business. SWCA recorded the resource on State of California Department of Parks and Recreation (DPR) Series 523 forms (Appendix C) and evaluated it for NRHP, CRHR, and local eligibility.

The two-story residence is clad in wood lap siding and was constructed ca. 1956 by Russell B. Grotemat, a former sea captain who developed the Seal Beach Trailer Park (Dawson 1990). No subsequent information was discovered regarding any former owners or occupants.

Although the subject building is recognizable to its original appearance, it is an unremarkable example of a reasonably common type- the vernacular, Mid-Century Modern residence. The building is not eligible for listing in NRHP or the CRHR under Criteria A/1 for its associations with events or B/2 for its associations with the important persons and is not eligible Criterion C or 3 for its architecture . No evidence was discovered to warrant consideration under Criterion D/4. The property is not eligible as a contributor to a larger historic district, nor is it eligible for local designation.



**Figure 3.** Overview of project area, view to the northeast.



**Figure 4.** Detail of very low ground visibility due to thick vegetation.





**Figure 5.** View of historic period residence within project area.

## **IMPACTS ASSESSMENT**

CEQA requires a lead agency to determine whether a project may have a significant effect on historical resources (Section 21084.1). If it can be demonstrated that a project would cause damage to a unique archaeological resource, the lead agency may require reasonable efforts be made to permit any or all of these resources to be preserved in place or left in an undisturbed state. To the extent that they cannot be left undisturbed, mitigation measures are required (Section 21083.2[a], [b], and [c]). No known archaeological resources would be impacted by this proposed project; however, the potential exists to find previously unrecorded deposits. The existing historic period residence located within the project area was not found eligible for listing on the CRHR and as such would not be impacted by the proposed project.

## **RECOMMENDATIONS**

Having not been found eligible for listing on the CRHR, no further work is recommended for the historic period residence located within the project area. The project area is highly sensitive for prehistoric and historical archaeological resources. Although no other cultural resources were identified during the cultural resources field survey, the literature search indicates that the project area is situated in a geographic location that was ideal for prehistoric human occupation. As a consequence, SWCA recommends the following mitigation measures to avoid significant effects to historical resources.

### **Archaeological Monitoring of Ground-disturbing Activity**

Anticipated ground-disturbing activities include excavation, demolition, and construction of various built environment elements, including improvements to the surrounding drainage system. Due to a high level of archaeological sensitivity within and around the project area, SWCA recommends that a qualified archaeologist be present to monitor all ground-disturbing activities. SWCA recommends that the monitor

work under the direction of a qualified principal investigator who meets the Secretary of the Interior's Professional Qualifications Standards for Archaeology (National Park Service 1983).

### Native American Monitoring of Ground-Disturbing Activity

Representatives from three local Native American groups have recommended Native American monitoring of project-related ground-disturbing activities (see Appendix B). SWCA concurs with this recommendation and suggests using a monitor from one of the respondents' groups, or a rotation of monitors from each of the groups, if feasible.

### Unanticipated Discovery of Cultural Resources

If cultural resources are encountered during ground-disturbing activities, the archaeological monitor shall be empowered to halt or redirect work away from the immediate area (an 8-meter [25-foot] radius) of the find and the principal investigator should be notified immediately to evaluate the find. If the discovery proves to be significant under CEQA, additional work, such as data recovery excavation, may be warranted and would be discussed in consultation with the City of Seal Beach.

### Unanticipated Discovery of Human Remains

The discovery of human remains is always a possibility during ground disturbances; State of California Health and Safety Code Section 7050.5 covers these findings. This code section states that no further disturbance shall occur until the Orange County Coroner has made a determination of origin and disposition pursuant to Public Resources Code Section 5097.98. The Orange County Coroner must be notified of the find immediately. If the human remains are determined to be prehistoric, the coroner will notify the NAHC, which will determine and notify a Most Likely Descendant (MLD). The MLD shall complete the inspection of the site within 48 hours of notification and may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials.

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## Appendix A

### **South Central Coastal Information Center Results Letter and Bibliography**



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May 9, 2011

SCCIC # 11463.8140

Mr. Kevin Hunt  
SWCA  
150 S. Arroyo Pkwy., 2<sup>nd</sup> Floor  
Pasadena, CA 91105  
(626) 240-0607

RE: Cultural Survey for the Department of Water and Power Specific Plan EIR, City of Seal Beach Project (Project #16915)

Dear Mr. Hunt,

As per your request received on April 28, 2011, a records search was conducted for the above referenced project. The search includes a review of all recorded archaeological sites within a 1/2-mile radius of the project site as well as a review of cultural resource reports on file. In addition, the California Points of Historical Interest (PHI), the California Historical Landmarks (CHL), the California Register of Historical Resources (CR), the National Register of Historic Places (NR), and the California State Historic Resources Inventory (HRI) listings were reviewed for the above referenced project. The following is a discussion of the findings.

**Los Alamitos, CA. & Seal Beach, CA. USGS 7.5' Quadrangles**

**ARCHAEOLOGICAL RESOURCES:**

Two archaeological sites (19-000278 and 30-001473) have been identified within a 1/2-mile radius of the project site. No archaeological sites are located within the project site. No sites are listed on the Archaeological Determination of Eligibility (DOE) list. No isolates have been identified within a 1/2-mile radius of the project site. No isolates are located within the project site.

**HISTORIC RESOURCES:**

One additional cultural resource (19-186115) has been identified within a 1/2-mile radius of the project site. No cultural resources are located within the project site.

Copies of our historic maps – Downey, CA. (1896 & 1941) and Las Bolsas, CA. (1896, 1941, & 1943) 15' USGS - are enclosed for your review.

The California Point of Historical Interest of the Office of Historic Preservation, Department of Parks and Recreation, lists one property within a 1/2-mile radius of the project site (**see below**).

ORA-020      Seal Beach Red Car  
Main Street & Electric Avenue  
Seal Beach  
#30-162293

The California Historical Landmarks of the Office of Historic Preservation, Department of Parks and Recreation, lists no properties within a 1/2-mile radius of the project site.

The California Register of Historical Resources lists one property within a 1/2-mile radius of the project site (**\*see enclosed HRI list**). These are properties determined to have a National Register of Historic Places Status of 1 or 2, a California Historical Landmark numbering 770 and higher, or a Point of Historical Interest listed after 1/1/1998.

The National Register of Historic Places lists one property within a 1/2-mile radius of the project site (**see below**).

Seal Beach 30-156069 Seal Beach City Hall 201 8th St. Seal Beach 19830811 83001221

The California Historic Resources Inventory lists five properties that have been evaluated for historical significance within a 1/2-mile radius of the project site (**see enclosed list**).

#### **PREVIOUS CULTURAL RESOURCES INVESTIGATIONS:**

Twenty-one studies (LA3583, LA4266, LA10483, OR493, OR639, OR1290, OR1301, OR1348, OR1581, OR1608, OR1609, OR1610, OR1643, OR1644, OR1816, OR1858, OR2033\*, OR3562, OR3735, OR3762, and OR3821) have been conducted within a 1/2-mile radius of the project site. Of these, one is located within the project site. There are ten additional investigations located on the Los Alamitos, CA. and Seal Beach, CA. 7.5' USGS Quadrangles that are potentially within a 1/2-mile radius of the project site. These reports are not mapped due to insufficient locational information.

*(\* = Located within the project site)*

Please forward a copy of any resulting reports from this project to the office as soon as possible. Due to the sensitive nature of archaeological site location data, we ask that you **do not include** resource location maps and resource location descriptions in your report if the report is for public distribution. If you have any questions regarding the results presented herein, please contact the office at 714.278.5395 Monday through Thursday 9:00 am to 3:30 pm.

Should you require any additional information for the above referenced project, reference the SCCIC number listed above when making inquiries. Requests made after initial invoicing will result in the preparation of a separate invoice.

Sincerely,  
SCCIC



Lindsey Noyes  
Staff Researcher

Enclosures:

- (X) Maps – Los Alamitos, CA. & Seal Beach, CA. 7.5' USGS Quadrangles, Downey, CA. (1896 & 1941) and Las Bolsas, CA. (1896, 1942, & 1943) 15' USGS Quadrangles – 12 pages
- (X) Bibliography – 8 pages
- (X) HRI – 2 pages
- (X) National Register Status Codes – 1 page
- (X) Site Records – (19-000278, 19-186115, and 30-001473) – 54 pages
- (X) Confidentiality Form
- (X) Invoice #11463.8140

## SCCIC Bibliography: Project #16915

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### LA-03583

*Author(s):* Bucknam, Bonnie M.

*Year:* 1974

*Title:* The Los Angeles Basin and Vicinity: a Gazetteer and Compilation of Archaeological Site Information

*Affiliation:* California State University, Long Beach

*Resources:*

*Quads:* ANAHEIM, BALDWIN PARK, BEVERLY HILLS, EL MONTE, HOLLYWOOD, INGLEWOOD, LA HABRA, LONG BEACH, LOS ALAMITOS, LOS ANGELES, MALIBU BEACH, NEWPORT BEACH, POINT DUME, REDONDO BEACH, SAN PEDRO, SEAL BEACH, SOUTH GATE, TOPANGA, TORRANCE, TRIUNFO PASS, VENICE, WHITTIER

*Pages:*

*Notes:* Sites too numerous to enter. Sites are mapped.

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### LA-04266

*Author(s):* Brooks, Sheilagh T.

*Year:* 1960

*Title:* A Deeply-buried Human Skull and Recent Stratigraphy at the Present Mouth of the San Gabriel River, Seal Beach, California

*Affiliation:* California State University, Long Beach

*Resources:* 19-000272

*Quads:* LOS ALAMITOS

*Pages:*

*Notes:*

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### LA-10483

*Author(s):* Fulton, Terri

*Year:* 2009

*Title:* Cultural Resources Assessment for the Alamitos Bay Marina Rehabilitation Project, City of Long Beach, Los Angeles County, California

*Affiliation:* LSA Associates, Inc.

*Resources:* 19-186115

*Quads:* LONG BEACH, LOS ALAMITOS, SEAL BEACH

*Pages:* 40

*Notes:*

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### OR-00493

*Author(s):* Anonymous

*Year:* 1980

*Title:* Archaeological Survey Report: the Hellman Property in Seal Beach

*Affiliation:* Archaeological Associates, Ltd.

*Resources:* 30-000256, 30-000257, 30-000258, 30-000259, 30-000260, 30-000261, 30-000262, 30-000263, 30-000850, 30-000851, 30-000852

*Quads:* LOS ALAMITOS, SEAL BEACH

*Pages:*

*Notes:*

## SCCIC Bibliography: Project #16915

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### OR-00639

*Author(s):* Anonymous  
*Year:* 1981  
*Title:* Archaeological Test Report on the Hellman Property Located in Seal Beach  
*Affiliation:* Scientific Resource Surveys, Inc.  
*Resources:* 30-000260, 30-000261, 30-000262, 30-000852  
*Quads:* LOS ALAMITOS, SEAL BEACH  
*Pages:*  
*Notes:*

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### OR-01290

*Author(s):* De Barros, Philip and Roger D. Mason  
*Year:* 1993  
*Title:* Cultural Resources Survey Report for the Unocal Property at 99 Marina Drive Seal Beach, California  
*Affiliation:* Chambers Group, Inc.  
*Resources:*  
*Quads:* SEAL BEACH  
*Pages:* 21  
*Notes:*

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### OR-01301

*Author(s):* Kelsey, Harry and Nicholas Magalousis  
*Year:* 1993  
*Title:* Historical Review and Archaeological Report for the Unocal On-shore Facility at 99 Marina Drive in Seal Beach California in Two Parts  
*Affiliation:* Consulting Archaeologist  
*Resources:*  
*Quads:* SEAL BEACH  
*Pages:*  
*Notes:*

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### OR-01348

*Author(s):* De Barros, Philip and Roger D. Mason  
*Year:* 1993  
*Title:* Addendum to Cultural Resources Survey Report for the Unocal Property at 99 Marina Drive Seal Beach, California  
*Affiliation:* Chambers Group, Inc.  
*Resources:*  
*Quads:* SEAL BEACH  
*Pages:*  
*Notes:*

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### OR-01581

*Author(s):* Whitney-Desautels, Nancy A.  
*Year:* 1997  
*Title:* Cultural Resource Assessment of the Hellman Ranch, Seal Beach  
*Affiliation:* Scientific Resource Surveys, Inc.  
*Resources:* 30-000256, 30-000257, 30-000258, 30-000259, 30-000260, 30-000261, 30-000262, 30-000263, 30-000264, 30-000265, 30-000850, 30-000851  
*Quads:* LOS ALAMITOS, SEAL BEACH  
*Pages:* 93  
*Notes:*

## SCCIC Bibliography: Project #16915

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### OR-01608

*Author(s):* Stickel, Gary E.

*Year:* 1996

*Title:* A Research Design and Investigation Program for Test Level Evaluations of Archaeological Sites Located on the Hellman Ranch, City of Seal Beach, California

*Affiliation:* Environmental Research Archaeologists

*Resources:* 30-000143, 30-000258, 30-000259, 30-000260, 30-000261, 30-000262, 30-000263, 30-000264, 30-000265, 30-000850, 30-000851, 30-000852

*Quads:* LOS ALAMITOS, SEAL BEACH

*Pages:*

*Notes:*

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### OR-01609

*Author(s):* York, Andrew L., James H. Cleland, and Michael Baksh

*Year:* 1997

*Title:* A Research Design for the Evaluation of Archaeological Sites Within the Hellman Ranch Specific Plan Area

*Affiliation:* KEA Environmental

*Resources:* 30-000260, 30-000261, 30-000262, 30-000263, 30-000264, 30-000850, 30-000851, 30-000852, 30-001472

*Quads:* LOS ALAMITOS, SEAL BEACH

*Pages:*

*Notes:*

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### OR-01610

*Author(s):* Stickel, Gary E.

*Year:* 1996

*Title:* An Archaeological Site Survey of the Hellman Ranch, City of Seal Beach, California

*Affiliation:* Environmental Research Archaeologists

*Resources:* 30-000143, 30-000258, 30-000259, 30-000260, 30-000261, 30-000262, 30-000263, 30-000264, 30-000265, 30-000850, 30-000851, 30-000852

*Quads:* LOS ALAMITOS, SEAL BEACH

*Pages:* 58

*Notes:*

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### OR-01643

*Author(s):* York, Andrew, Cleland, James H., and Baksk, Michael G.

*Year:* 1997

*Title:* A Research Design for the Evaluation of Archaeological Sites Within the Hellman Ranch Specific Plan Area

*Affiliation:* KEA Environmental, Inc.

*Resources:* 30-000256, 30-000260, 30-000261, 30-000262, 30-000263, 30-000264, 30-000852, 30-001472, 30-001473

*Quads:* LOS ALAMITOS, SEAL BEACH

*Pages:* 135

*Notes:*

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### OR-01644

*Author(s):* York, Andrew L., James H. Cleland, and Michael G. Baksh

*Year:* 1997

*Title:* A Research Design for the Evaluation of Archaeological Sites Within the Hellman Ranch Specific Plan Area

*Affiliation:* KEA Environmental, Inc.

*Resources:* 30-000256, 30-000260, 30-000261, 30-000262, 30-000263, 30-000264, 30-000852, 30-001472, 30-001473

*Quads:* LOS ALAMITOS, SEAL BEACH

*Pages:*

*Notes:*

## SCCIC Bibliography: Project #16915

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### OR-01816

*Author(s):* Stickel, Gary E.

*Year:* 1996

*Title:* A Research Design and Investigation Program for Test Level Evaluations of Archaeological Sites Located on the Hellman Ranch, City of Seal Beach, California

*Affiliation:* Environmental Research Archaeologists

*Resources:* 30-000143, 30-000256, 30-000257, 30-000258, 30-000259, 30-000260, 30-000261, 30-000262, 30-000263, 30-000264, 30-000850, 30-000851, 30-000852

*Quads:* LOS ALAMITOS, SEAL BEACH

*Pages:*

*Notes:*

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### OR-01858

*Author(s):* York, Andrew L. and Cleland, James H.

*Year:* 1997

*Title:* A Research Design for the Evaluation of Archaeological Sites Within the Hellman Ranch Specific Plan Area

*Affiliation:* KEA Environmental, Inc

*Resources:* 30-000256, 30-000260, 30-000262, 30-000263, 30-000850, 30-000851, 30-000852, 30-001472, 30-001473

*Quads:* SEAL BEACH

*Pages:*

*Notes:*

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### OR-02033

*Author(s):* Mason, Roger D.

*Year:* 1987

*Title:* Research Design for Evaluation of Coastal Archaeological Sites in Northern Orange County, California

*Affiliation:* Scientific Resource Surveys, Inc.

*Resources:* 30-000078, 30-000082, 30-000083, 30-000084, 30-000085, 30-000086, 30-000088, 30-000143, 30-000145, 30-000183, 30-000256, 30-000257, 30-000258, 30-000259, 30-000260, 30-000261, 30-000262, 30-000263, 30-000264, 30-000288, 30-000290, 30-000291, 30-000292, 30-000294, 30-000302, 30-000322, 30-000365, 30-000366, 30-000368, 30-000555

*Quads:* LOS ALAMITOS, NEWPORT BEACH, SEAL BEACH

*Pages:* 88

*Notes:*

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### OR-03562

*Author(s):* Monica Strauss

*Year:* 2009

*Title:* Negative Archaeological Monitoring Report for the 400 Marina Drive Development Project, City of Seal Beach, CA

*Affiliation:* EDAW, Inc.

*Resources:*

*Quads:* SEAL BEACH

*Pages:* 15

*Notes:*

## SCCIC Bibliography: Project #16915

### OR-03735

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*Author(s):* Bai "Tom" Tang

*Year:* 2008

*Title:* Due-diligence historical archaeological resources review, City of Seal Beach Sewer Capital Improvement Projects, City of Seal Beach, Orange County, California

*Affiliation:* CRM Tech

*Resources:* 30-000256, 30-000258, 30-000259, 30-001473

*Quads:* LOS ALAMITOS, SEAL BEACH

*Pages:* 18

*Notes:*

### OR-03762

---

*Author(s):* Candace Ehringer

*Year:* 2009

*Title:* Negative Archaeological Monitoring Report for the Hellman Ranch Tank Farm Replacement Project, City of Seal Beach, California

*Affiliation:* EDAW, Inc.

*Resources:* 30-000850, 30-000851

*Quads:* LOS ALAMITOS, SEAL BEACH

*Pages:* 18

*Notes:*

### OR-03821

---

*Author(s):* Tang, Bai and Hogan, Michael

*Year:* 2009

*Title:* Identification and Evaluation of Historic Properties City of Seal Beach Sewer Capital Improvement Projects (Southern Portion/Downtown Area) City of Seal Beach, Orange County, California

*Affiliation:* CRM Tech

*Resources:* 19-000272, 19-000306, 19-001821, 19-186115, 19-186880, 19-186926, 19-187657, 30-000256, 30-000257, 30-000258, 30-000259, 30-000260, 30-000261, 30-000262, 30-000263, 30-000264, 30-000265, 30-000322, 30-000850, 30-000851, 30-000852, 30-001455, 30-001463, 30-001473, 30-001539, 30-001540, 30-001541, 30-001542, 30-001543, 30-001544, 30-001545, 30-001644, 30-176491, 30-176492, 30-176493, 30-176494, 30-176495, 30-176496, 30-176497, 30-176498, 30-176499, 30-176500, 30-176501, 30-176502, 30-176503, 30-176504, 30-176505, 30-176506, 30-176507, 30-176508, 30-176509, 30-176510, 30-176511, 30-176512, 30-176513, 30-176514, 30-176515, 30-176516, 30-176517, 30-176518, 30-176519, 30-176520, 30-176521, 30-176522, 30-176523, 30-176524, 30-176525, 30-176526, 30-176527, 30-176528, 30-176529, 30-176530, 30-176531, 30-176532, 30-176533, 30-179842, 30-179843, 30-179844, 30-179845, 30-179846, 30-179847, 30-179848, 30-179849, 30-179850

*Quads:* LOS ALAMITOS, SEAL BEACH

*Pages:* 49

*Notes:*



## SCCIC Bibliography: Los Alamitos & Seal Beach Unmappable

LA-00105

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*Author(s):* Kaufman, Susan Hector

*Year:* 1976

*Title:* Archaeological Resources Within the Los Angeles County Area Are Evaluated As to the Importance, Nature, and Location These Resources Are Analyzed Following Careful Review of Maps and Archival Material Housed at the UCLA, Archaeological Survey

*Affiliation:* University of California, Los Angeles Archaeological Survey

*Resources:*

*Quads:* AZUSA, BALDWIN PARK, BEVERLY HILLS, EL MONTE, GLENDALE, INGLEWOOD, LONG BEACH, LOS ALAMITOS, LOS ANGELES, PALMDALE, PASADENA, REDONDO BEACH, SAN DIMAS, SAN FERNANDO, SANTA CATALINA WEST, SOUTH GATE, TORRANCE, VENICE, WHITTIER

*Pages:*

*Notes:*

LA-04323

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*Author(s):* Hill, James N.

*Year:* 1985

*Title:* Cultural Evolution in the Archaic/mesolithic: a Research Design for the Los Angeles Basin

*Affiliation:* Archaeological Resource Management Corp.

*Resources:*

*Quads:*

*Pages:*

*Notes:* Unmappable

OR-01558

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*Author(s):* Hastey, Ed

*Year:* 1992

*Title:* Proposed South Coast Resource Management Plan and Final Environmental Impact Statement

*Affiliation:* Bureau of Land Management

*Resources:*

*Quads:* ACTON, AGUA DULCE, ALBERHILL, BEVERLY HILLS, BLACK MTN, BLACK STAR CANYON, BURBANK, BURNT PEAK, CALABASAS, CANADA GOBERNADORA, CANOGA PARK, CHILAO FLAT, COBBLESTONE MTN, CONDOR PEAK, CORONA SOUTH, CRYSTAL LAKE, DANA POINT, EL TORO, GREEN VALLEY, HOLLYWOOD, JUNIPER HILLS, LA LIEBRE RANCH, LAGUNA BEACH, LAKE HUGHES, LEBEC, LITTLEROCK, MALIBU BEACH, MESCAL CREEK, MINT CANYON, MOUNT SAN ANTONIO, NEENACH SCHOOL, NEWHALL, NEWPORT BEACH, OAT MOUNTAIN, ORANGE, PACIFICO MOUNTAIN, PALMDALE, POINT DUME, PRADO DAM, RITTER RIDGE, SAN CLEMENTE, SAN FERNANDO, SAN JUAN CAPISTRANO, SAN PEDRO, SANTA SUSANA, SANTIAGO PEAK, SEAL BEACH, SITTON PEAK, SLEEPY VALLEY, SUNLAND, THOUSAND OAKS, TOPANGA, TORRANCE, TRIUNFO PASS, TUSTIN, VAL VERDE, VALYERMO, VAN NUYS, WARM SPRINGS MOUNTAIN, WATERMAN MTN, WHITAKER PEAK

*Pages:*

*Notes:* Indexed report. This report consists of a huge overview of Los Angeles and Orange counties and involves all Orange County quads and all except the NE quads of Los Angeles Co. All the Quad no. were entered. See report for full listing of Quad names.

OR-01633

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*Author(s):* Robinson, Cecil V.

*Year:* 1936

*Title:* A History of Irrigation in Orange County

*Affiliation:*

*Resources:*

*Quads:*

*Pages:*

*Notes:* Research project covers all of Orange county, Unmappable

## SCCIC Bibliography: Los Alamitos & Seal Beach Unmappable

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### OR-02608

*Author(s):* Duke, Curt

*Year:* 2003

*Title:* Cultural Resource Assessment Cingular Wireless Facility No. Cm 085-04 Orange County, California

*Affiliation:* LSA Associates, Inc.

*Resources:*

*Quads:* LOS ALAMITOS

*Pages:*

*Notes:* No map, unmapable

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### OR-02697

*Author(s):* Villalobos

*Year:* 2001

*Title:* Draft Environmental Assessment for Surfside-sunset Beach Nourishment Project Stage 11 Orange County, California

*Affiliation:* U.S. Army Corps of Engineers Los Angeles District

*Resources:*

*Quads:* SEAL BEACH

*Pages:*

*Notes:* Unmapable

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### OR-02785

*Author(s):* Bonner, Wayne H.

*Year:* 2001

*Title:* Records Search Results for Sprint Pcs Facility Og54xc434b (china King Alley), Located at 3440 W. Lincoln Blvd. in Anaheim, Orange County, California

*Affiliation:* Michael Brandman Associates

*Resources:*

*Quads:* LOS ALAMITOS

*Pages:*

*Notes:* Unmapable, no exact location

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### OR-03267

*Author(s):* Shepard, Richard S. and Roger D. Mason

*Year:* 2001

*Title:* Cultural Resources Records Search and Constraints Analysis Report: Lax/south (orange County) High Speed Ground Access Study, Los Angeles and Orange Counties, California

*Affiliation:* Chambers Group, Inc.

*Resources:* 19-000088, 19-000831, 19-001575, 30-000062, 30-000113, 30-000195, 30-000373, 30-001352, 30-001538

*Quads:* ANAHEIM, EL TORO, INGLEWOOD, LONG BEACH, LOS ALAMITOS, LOS ANGELES, NEWPORT BEACH, ORANGE, SEAL BEACH, SOUTH GATE, TORRANCE, TUSTIN, VENICE, WHITTIER

*Pages:*

*Notes:*

## SCCIC Bibliography: Los Alamitos & Seal Beach Unmappable

OR-03382

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*Author(s):* Anonymous

*Year:* 1986

*Title:* Comprehensive Historic and Architectural Resources Inventory for the City of Garden Grove

*Affiliation:* The Planning Consortium, Historic and Environmental Studies

*Resources:*

*Quads:* ANAHEIM, LOS ALAMITOS

*Pages:*

*Notes:* unmappable

OR-03861

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*Author(s):* Cook, John, Huntley, Deborah, and Andrews, Sherri

*Year:* 2000

*Title:* A Cultural Resources Inventory of the Proposed PF. Net/AT&T Fiber Optics Conduit Los Angeles to Marine Corps Base Camp Pendleton, Los Angeles and Orange Counties, California

*Affiliation:* ASM Affiliates, Inc

*Resources:* 19-002753, 19-002795, 19-166921, 19-167276, 19-186110, 30-000021, 30-000022, 30-000188, 30-000375, 30-000392, 30-000579, 30-000599, 30-000835, 30-000836, 30-000837, 30-000838, 30-000855, 30-000856, 30-000924, 30-001107, 30-001190, 30-001191, 30-001278, 30-001279, 30-001327, 30-001328, 30-001329, 30-001330, 30-001337, 30-001338, 30-001343, 30-001507, 30-001508, 30-120015, 30-120016, 30-120017, 30-150081, 30-150082, 30-150083, 30-162531, 30-176486, 30-176573, 30-176610, 30-176615

*Quads:* ANAHEIM, DANA POINT, HOLLYWOOD, LOS ALAMITOS, LOS ANGELES, SAN CLEMENTE, SAN JUAN CAPISTRANO, SOUTH GATE

*Pages:* 76

*Notes:*

## Appendix B

### **Native American Correspondence**

STATE OF CALIFORNIA

Edmund G. Brown, Jr., Governor

**NATIVE AMERICAN HERITAGE COMMISSION**

915 CAPITOL MALL, ROOM 364  
SACRAMENTO, CA 95814  
(916) 653-6251  
Fax (916) 657-5390  
Web Site [www.nahc.ca.gov](http://www.nahc.ca.gov)  
ds\_nahc@pacbell.net



April 29, 2011

Mr. Kevin Hunt, Senior Project Manager, Cultural Resources

**SWCA Environmental Consultants**

150 S. Arroyo Parkway, Second Floor  
Pasadena, CA 91105

Sent by FAX to: 626-240-0607

No. of Pages: 5

Re: Request for a Sacred Lands File Search and Native American Contacts list for the  
"Project # 16915; Cultural Resources survey for the Department of Water and  
Power Specific Plan EIR, City of Seal Beach Project, Seal Beach California;"  
located in the City of Seal Beach; Orange County, California

Dear Mr. Hunt:

The Native American Heritage Commission (NAHC), the State of California  
'Trustee Agency' for the protection and preservation of Native American cultural resources.

The NAHC Sacred Lands File search results indicated that Native American cultural resources were identified within ½ mile of the area of potential effect (e.g. APE) based on the information you submitted to the NAHC. Also, the absence of evidence of archaeological or Native American cultural resources does not indicate that such does not exist; items of significance may be unearthed during project construction activity.

The California Environmental Quality Act (CEQA – CA Public Resources Code §§ 21000-21177, amendments effective 3/18/2010) requires that any project that causes a substantial adverse change in the significance of an historical resource, that includes archaeological resources, is a 'significant effect' requiring the preparation of an Environmental Impact Report (EIR) per the CEQA Guidelines defines a significant impact on the environment as 'a substantial, or potentially substantial, adverse change in any of physical conditions within an area affected by the proposed project, including ...objects of historic or aesthetic significance.' In order to comply with this provision, the lead agency is required to assess whether the project will have an adverse impact on these resources within the 'area of potential effect (APE)', and if so, to mitigate that effect. CA Government Code §65040.12(e) defines "environmental justice" provisions and is applicable to the environmental review processes.

Early consultation with Native American tribes in your area is the best way to avoid unanticipated discoveries once a project is underway. Attached are two lists of Native American Contacts (one for the CEQA EIR and one for SB 18 requirements per California Government code §65352.3) who may have knowledge of the religious and cultural significance of the historic properties of the proposed project for the area (e.g. APE). Consultation with Native American communities is also a matter of environmental justice as defined by California Government Code §65040.12(e). We urge consultation with those tribes and interested Native Americans on the list of Native American Contacts we attach to this letter in order to see if your proposed project might impact Native American cultural resources. Lead agencies should

consider avoidance as defined in §15370 of the CEQA Guidelines when significant cultural resources as defined by the CEQA Guidelines §15064.5 (b)(c)(f) may be affected by a proposed project. If so, Section 15382 of the CEQA Guidelines defines a significant impact on the environment as "substantial."

Furthermore we suggest that you contact the California Historic Resources Information System (CHRIS) for pertinent archaeological data within or near the APE, at the California Office of Historic Preservation (916) 446-7000.

Consultation with tribes and interested Native American consulting parties, on the NAHC list, should be conducted in compliance with the requirements of federal NEPA (42 U.S.C 4321-43351) and Section 106 and 4(f) of federal NHPA (16 U.S.C. 470 *et seq*), 36 CFR Part 800.3 (f) (2) & .5, the President's Council on Environmental Quality (CSQ, 42 U.S.C 4371 *et seq.* and NAGPRA (25 U.S.C. 3001-3013) as appropriate. The 1992 *Secretary of the Interiors Standards for the Treatment of Historic Properties* were revised so that they could be applied to all historic resource types included in the National Register of Historic Places and including cultural landscapes. Also, federal Executive Orders Nos. 11593 (preservation of cultural environment), 13175 (coordination & consultation) and 13007 (Sacred Sites) are helpful, supportive guides for Section 106 consultation.

Also, California Public Resources Code Section 5097.98, California Government Code §27491 and Health & Safety Code Section 7050.5 provide for provisions for accidentally discovered archeological resources during construction and mandate the processes to be followed in the event of an accidental discovery of any human remains in a project location other than a 'dedicated cemetery'.

To be effective, consultation on specific projects must be the result of an ongoing relationship between Native American tribes and lead agencies, project proponents and their contractors, in the opinion of the NAHC. Regarding tribal consultation, a relationship built around regular meetings and informal involvement with local tribes will lead to more qualitative consultation tribal input on specific projects.

The response to this search for Native American cultural resources is conducted in the NAHC Sacred Lands Inventory, established by the California Legislature (CA Public Resources Code 5097.94(a) and is exempt from the CA Public Records Act (c.f. California Government Code 6254.10) although Native Americans on the attached contact list may wish to reveal the nature of identified cultural resources/historic properties. Confidentiality of "historic properties of religious and cultural significance" may also be protected under Section 304 of the NHPA or at the Secretary of the Interior discretion if not eligible for listing on the National Register of Historic Places. The Secretary may also be advised by the federal Indian Religious Freedom Act (cf. 42 U.S.C., 1996) in issuing a decision on whether or not to disclose items of religious and/or cultural significance identified in or near the APE and possibility threatened by proposed project activity.

If you have any questions about this response to your request, please do not hesitate to contact me at (916) 653-6251.

Sincerely,

  
Dave Singleton  
Program Analyst

**Native American Tribal Consultation List  
Orange County  
April 29, 2011**

**Ti'At Society/Inter-Tribal Council of Pimu**  
Cindi M. Alvitre, Chairwoman-Manisar  
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Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is applicable only for consultation with Native American tribes under Government Code Section 65352.3.

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**April 29, 2011**

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**This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed Project # 16915: Cultural Resources Survey for the Department of Water and Power Specific Plan EIR, City of Seal Beach Project, Seal Beach, California - Orange County.**



**Native American Contact List**  
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April 29, 2011

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ENVIRONMENTAL CONSULTANTS

Sound Science. Creative Solutions.

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May 4, 2011

Juaneño Band of Mission Indians  
Alfred Cruz, Cultural Resources Coordinator  
P.O. Box 25628  
Santa Ana, CA 92799

Sent Via U.S. Mail

**RE: Cultural Resources Survey for the Department of Water and Power Specific Plan EIR Project, City of Seal Beach, Orange County, California.**

Dear Mr. Cruz:

SWCA Environmental Consultants (SWCA) has been retained to conduct a cultural resources survey for the Department of Water and Power Specific Plan Environmental Impact Report (EIR) Project in the city of Seal Beach, Orange County, California. As part of the process of identifying cultural resources issues for this project, the Native American Heritage Commission (NAHC) was contacted by SWCA to conduct a Sacred Lands File search and to provide a list of Native American individuals and/or tribal organizations that may have knowledge of cultural resources in or near the project area. The NAHC search indicated "that Native American cultural resources were identified within 0.5 mile of the area of potential effect", and recommended that we consult with you directly regarding your knowledge of the presence of cultural resources that may be impacted by this project.

The City of Seal Beach seeks to develop a project site consisting of 10.6 acres of Department of Water and Power property located between 1<sup>st</sup> Street to the east, the San Gabriel River Channel to the west, Marina Drive to the north and public beach to the south. The project location is shown on the USGS quadrangle *Seal Beach, California*, Township 5 South, Range 12 West, Section 14 (see attached map).

If you have any knowledge of cultural resources that may exist within or near the project area and wish to have your concerns considered, please contact Kevin Hunt at (626) 240-0587, [khunt@swca.com](mailto:khunt@swca.com), or at the above address at your earliest convenience. Thank you for your assistance. This consultation is project-specific and is not intended to constitute as SB 18 consultation, should that be required for this project.

Sincerely,

Kevin Hunt  
Senior Project Manager, Cultural Resources

Enclosure: Project Location Map



## RECORD OF CONVERSATION

**DATE OF CALL:** 7/19/2011 **TIME OF CALL:** 4:05 PM **DURATION:** 20 mins.

**CALL/CALLER:** Alfred Cruz, Juaneño Band of Mission Indians, with Kevin Hunt of SWCA

**PHONE NUMBER:** 714.321.1944

**PROJECT NAME/NUMBER:** 16915 - Seal Beach DWP Project

### SUBJECT OF CALL:

Mr. Cruz is concerned about the project. He said the coastal area, especially along rivermouths, was intensively used by Native Americans. He recommends full-time archaeological and Native American monitoring. He asked about sites that came up in the records search and noted that Native American people moved around a lot and used many areas; that the Juaneños were not only at Mission San Juan Capistrano. He stated that his group (Juaneño Band of Mission Indians) can provide monitoring services. We also chatted about unrelated projects and local Native American concerns.

## **RECORD OF CONVERSATION**

**DATE OF CALL:** 5/11/2011 **TIME OF CALL:** 10:29 AM **DURATION:** 10 mins.

**CALL/CALLER:** Anthony Morales, Gabrielino Tongva Tribal Council, with Kevin Hunt of SWCA

**PHONE NUMBER:** Received

**PROJECT NAME/NUMBER:** 16915 - Seal Beach DWP Project

### **SUBJECT OF CALL:**

Mr. Morales said that anything along the coast and ocean is very sensitive. He mentioned nearby projects at Hellman Ranch and Seal Beach Naval Weapons Station, as well as the ethnographic village of Puvungna at CSULB. He is very concerned about the project and recommends full-time Native American monitoring by a Gabrielino. Mr. Morales repeated that the area is very sensitive for any ground disturbance.

## **RECORD OF CONVERSATION**

**DATE OF CALL:** 6/02/2011 **TIME OF CALL:** 7:00 PM **DURATION:** 8 mins.

**CALL/CALLER:** Joyce Perry, Juaneño Band of Mission Indians Acjachemen Nation

**PHONE NUMBER:** 949.293.8522

**PROJECT NAME/NUMBER:** 16915 - Seal Beach DWP Project

**SUBJECT OF CALL:**

Ms. Perry called on behalf of herself and Chariperson David Belardes. She said that the coastal area, including the project is very sensitive to her people. She mentioned sensitive sites at Hellman Ranch and Bolsa Chica and recommends archaeological and Native American monitoring.

## Appendix C

### **Resource Record for Historic Period Building**

State of California — The Resources Agency  
DEPARTMENT OF PARKS AND RECREATION  
**PRIMARY RECORD**

Primary #  
HRI #  
Trinomial  
NRHP Status Code 6Z

Other Listings  
Review Code

Reviewer

Date

Page 1 of 3

\*Resource Name or #: 16 Marina Drive

P1. Other Identifier:

\*P2. Location: ☐ Not for Publication ☒ Unrestricted

\*a. County: Los Angeles

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

\*b. USGS 7.5' Quad: Seal Beach, CA Date: 1966 (PR 1972)

T 5S R 12W of Sec 14

B.M. S.B.

c. Address: 16 Marina Drive

City: Seal Beach

Zip: 90740

d. UTM: Zone: ; mE/ mN (G.P.S.)

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Elevation:

APN 043-172-07, bordered by Marina Drive to the northeast, a concrete path and the San Gabriel River to the north and a vacant lot to the south and southwest.

\*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

The subject building is a two-story, single family house, designed in a vernacular, Mid-Century Modern-style. The building is irregular in plan with a "pop up" second floor and attached garage. It has a flat roof with overhanging open-eaves, exposed rafters and painted fascia. The roof is sheathed in hot mopped asphalt roofing. There is an interior brick chimney located at the southeast corner of the building. Exterior walls are clad in wood lap siding and running bond brick veneer along the east façade. The front entrance is located off a covered, partially open patio at the northeast corner of the building and features a wood and glass-paneled door. The roof of the patio consists of corrugated plastic panels. Visible windows include aluminum framed fixed light, sliding sash, and casement windows. All windows are surrounded by painted wood dressings. The west elevation contains a decorative stained glass window located on the first floor and a sliding glass door. The southern wall of the garage is composed of running bond brick. To the west and north of the building is a small yard with grass, a few mature trees, and a flagpole. The south and southwest of the property is enclosed by a chain link fence topped with barbed wire. The north and northwest of the building is enclosed by a short wood fence that sits atop a concrete retaining wall. There is a steep driveway located southeast of the building and a small concrete staircase to the northeast. The property is located at the western corner of a triangular-shaped parcel. that includes two additional buildings to the east: a rectangular commercial boat garage (with a "pop up" second floor office) and a large corrugated metal building. Alterations to the property include the addition of wood lap siding (1973), the application of hot mop asphalt roofing (1973 and 1979), and the extension of the poured-in-place wall (1999).

\*P3b. Resource Attributes: (List attributes and codes) HP2. Single family property

\*P4. Resources Present: ☒ Building ☐ Structure ☐ Object ☐ Site ☐ District ☐ Element of District ☐ Other (Isolates, etc.)



P5b. Description of Photo: (View, date, accession #)  
View southwest, September 21, 2011,  
Photograph 0386.jpg

\*P6. Date Constructed/Age and Sources:

☒ Historic ☐ Prehistoric ☐ Both

ca. 1956, City of Seal Beach Building Permits #4610 and #4735.

\*P7. Owner and Address: unknown

\*P8. Recorded by: (Name, affiliation, and address)

S. Treffers  
SWCA Environmental Consultants  
150 S. Arroyo Parkway, 2nd Floor  
Pasadena, CA 91105

\*P9. Date Recorded: September 21, 2011

\*P10. Survey Type: (Describe) Intensive

\*P11. Report Citation: (Cite survey report and other sources, or enter "none.")

Cultural Resources Survey Report for the  
Department of Water and Power Specific Plan  
Project, City of Seal Beach, Orange County,  
California (SWCA Environmental Consultants

2011).

\*Attachments: ☐ NONE ☒ Location Map ☐ Sketch Map ☐ Continuation Sheet ☒ Building, Structure, and Object Record  
☐ Archaeological Record ☐ District Record ☐ Linear Feature Record ☐ Milling Station Record ☐ Rock Art Record  
☐ Artifact Record ☐ Photograph Record ☐ Other (List):



State of California — The Resources Agency  
DEPARTMENT OF PARKS AND RECREATION  
**LOCATION MAP**

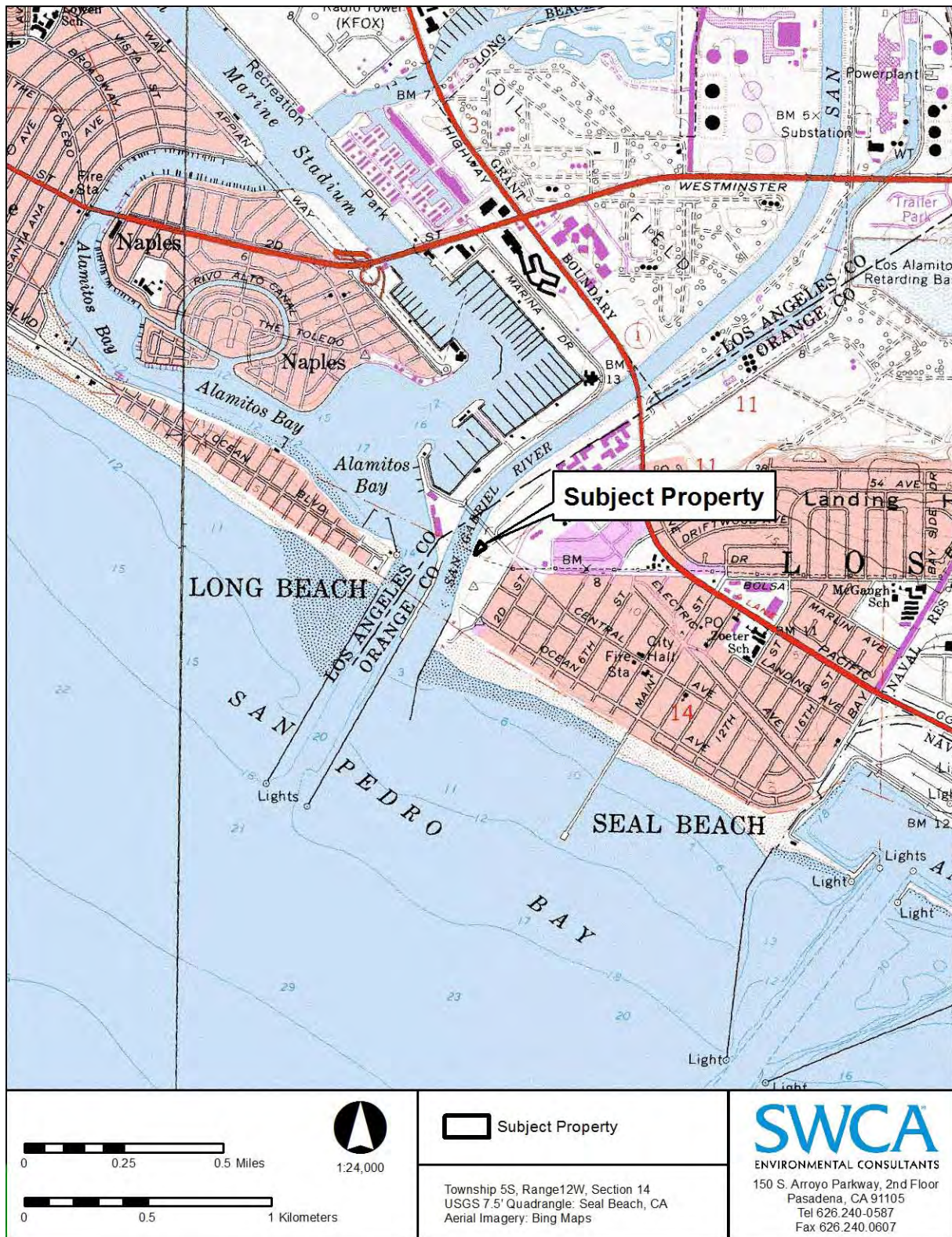
Primary #  
HRI#  
Trinomial

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\*Resource Name or #: 16 Marina Drive

\*Map Name: Seal Beach, California

\*Scale: 1:24,000 \*Date of Map: 1966 (PR 1972)





**BUILDING, STRUCTURE, AND OBJECT RECORD**

Page 3 of 3

\*NRHP Status Code 6Z

\*Resource Name or # (Assigned by recorder) 16 Marina Drive

- B1. Historic Name: none  
B2. Common Name: none  
B3. Original Use: Residential B4. Present Use: Residential

\*B5. Architectural Style: Vernacular Mid-Century Modern

\*B6. Construction History: (Construction date, alterations, and date of alterations)

Built ca. 1956 (City of Seal Beach Building Permits). Alterations: addition of wood siding (1973, Building Permit #358R), hot mop asphalt roofing (1973, BP#358R; 1979, BP#579-674), and the extension of existing poured in place wall (1999, BP#18722).

\*B7. Moved? ☒ No ☐ Yes ☐ Unknown Date: N/A Original Location: N/A

\*B8. Related Features:

B9a. Architect: none

b. Builder: Russell B. Grotemat

\*B10. Significance: Theme:

Area:

Period of Significance:

Property Type:

Applicable Criteria:

The subject building is a single-family residence constructed by Russell B. Grotemat, a former sea captain who was responsible for the development of the nearby Seal Beach Trailer Park, and was likely built in 1956 according to City of Seal Beach building records. The property on which the building is situated was owned by Grotemat by 1949; at which time he developed a series of small buildings on the lot, none of which currently remain (BP#3559, #3701). Building permits reveal construction activity between 1955 and 1957 at 10 and 12 Bolsa Avenue (now Marina Drive), including the construction of three buildings (BP# 4553, #4610, #4735). While there is no mention of 16 Bolsa Avenue (or Marina Drive), a newspaper article from 1966 lists Grotemat residing at 16 Marina Drive (*Los Angeles Times* 27 March 1966). Grotemat, owned the residence until his death in 1972 (Dawson 1990), at which time the Grotemat estate assumed ownership. Ownership changed to Rocky Gentner by 1999. No subsequent information was discovered about any former owners or occupants.

Known alterations to the subject building include application of wood siding in 1973 (BP#358R); hot mop of the roof in 1973 and 1979 (1973, BP#358R; 1979, BP#579-674); and extension of the existing poured-in-place wall in 1999 (BP#18722).

Although the subject building is recognizable to its original appearance, it is an unremarkable example of a reasonably common type- the vernacular, Mid-Century Modern residence. The building is not eligible for listing in NRHP or the CRHR under under Criteria A/1 for its associations with events or B/2 for its associations with the important persons and is not eligible Criterion C or 3 for its architecture . No evidence was discovered to warrant consideration under Criterion D/4. The property is not eligible as a contributor to a larger historic district, nor is it eligible for local designation.

B11. Additional Resource Attributes: (List attributes and codes)

\*B12. References:

Building Permits for 10, 12, and 16 Marina Drive, City of Seal Beach  
Building and Safety Division.

"Republican Unit Plans Home Tour." *Los Angeles Times* March 27, 1966,  
OC21.

Dawson, Bill. "Seal Beach Trailer Park Background." City of Seal Beach  
Planning Commission Meeting, Minutes of October 17, 1990.

B13. Remarks:

\*B14. Evaluator: S. Treffers

\*Date of Evaluation: August 24, 2011

(This space reserved for official comments.)

(Sketch Map with north arrow required.)



**Paleontological Resources  
Assessment Report for the  
Department of Water and Power  
Specific Plan Amendment Project,  
City of Seal Beach, Orange County,  
California**

Prepared for

**RBF Consulting**

Prepared by

**SWCA Environmental Consultants**

**Pasadena Office**

June 2011



**PALEONTOLOGICAL RESOURCES ASSESSMENT REPORT FOR  
THE DEPARTMENT OF WATER AND POWER SPECIFIC PLAN  
AMENDMENT PROJECT, CITY OF SEAL BEACH, ORANGE  
COUNTY, CALIFORNIA**

Submitted to

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Irvine, California 92618

Submitted by

**SWCA Environmental Consultants**  
150 South Arroyo Parkway, 2nd Floor  
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SWCA Project Number: 16915

July 6, 2011



---

Jessica L. DeBusk, SWCA Project Manager and Paleontology Lead



---

Cara Corsetti, Orange County Certified Paleontologist and SWCA Office Principal



## **PROJECT SUMMARY**

### **Purpose and Scope**

SWCA Environmental Consultants (SWCA) was retained by RBF Consulting to conduct paleontological resources services for the Department of Water and Power Specific Plan Amendment project (project) located in the city of Seal Beach, Orange County, California. These services consisted of a museum records search and literature review and the preparation of this paleontological resources assessment report, which includes recommendations for project-specific mitigation measures.

### **Dates of Investigation**

The museum records search was performed on May 31, 2011. This technical report was completed in July 2011.

### **Results of the Investigation**

According to geologic mapping by Morton and Miller (1981) and museum records (Rhue 2011), the project area is immediately underlain by Quaternary-age deposits of Pleistocene age (2.6 million years ago to 10,000 years before present [BP]) and Holocene age (10,000 years BP to Recent). Collections maintained by the Natural History Museum of Los Angeles County contain no recorded vertebrate fossil localities in the project area; however, at least five vertebrate localities have been documented nearby in similar geologic deposits occurring in the project area. These localities have yielded abundant species of marine vertebrates, including sharks and rays, as well as terrestrial mammals ranging in size from mammoths and ground sloths to pocket gophers.

The combined results of the museum records search, literature review, and geologic map review indicate that the project area is in part underlain by geologic deposits determined to have a high paleontological resource potential (sensitivity). Therefore, construction-related excavations related to any future development of the project area could result in an adverse impact to nonrenewable fossil resources and may require implementation of paleontological resources mitigation measures to reduce such impacts to a less-than-significant level.

### **Recommendations**

SWCA recommends that a qualified paleontologist be retained to design and implement a paleontological monitoring and mitigation plan during any substantial construction excavations that may occur in paleontologically sensitive Pleistocene-age deposits known to occur in the project area. Very shallow construction excavations (estimated at less than a few feet deep) within project areas underlain by Holocene-age deposits will not require paleontological monitoring, because these younger sediments are determined to have no paleontological sensitivity.

In the event of a discovery, all fossils and pertinent data recovered during construction should be prepared, identified, analyzed, and repositied in a public museum or other approved curation facility.

### **Disposition of Data**

This report will be filed with RBF Consulting. A copy will be retained at SWCA, along with all other records relating to the project.

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## **INTRODUCTION**

This report presents the findings of a comprehensive literature review, museum records search, and geologic map review conducted for the Department of Water and Power (DWP) Specific Plan Amendment project (project) located in the city of Seal Beach, Orange County, California. These services were performed to evaluate the paleontological sensitivity in and near the project area, assess potential project-related impacts on paleontological resources, and provide recommendations for project-specific mitigation measures. These services were conducted in accordance with the professional guidelines established by the Society of Vertebrate Paleontology (SVP) (1995) and meet the requirements set forth by Orange County (Eisentraut and Cooper 2002).

## **Definition and Significance of Paleontological Resources**

Paleontology is a multidisciplinary science that combines elements of geology, biology, chemistry, and physics in an effort to understand the history of life on earth. Paleontological resources, or fossils, are the remains, imprints, or traces of once-living organisms preserved in rocks and sediments. These include mineralized, partially mineralized, or unmineralized bones and teeth, soft tissues, shells, wood, leaf impressions, footprints, burrows, and microscopic remains. The fossil record is the only evidence that life on earth has existed for more than 3.6 billion years. Fossils are considered nonrenewable resources because the organisms they represent no longer exist. Thus, once destroyed, a fossil can never be replaced. Fossils are an important scientific and educational resource because they are used to

- study the phylogenetic relationships between extinct organisms, as well as their relationships to modern groups;
- elucidate the taphonomic, behavioral, temporal, and diagenetic pathways responsible for fossil preservation, including biases in the fossil record;
- reconstruct ancient environments, climate change, and paleoecological relationships;
- provide a measure of relative geologic dating, which forms the basis for biochronology and biostratigraphy, and which is an independent and supporting line of evidence for isotopic dating;
- study the geographic distribution of organisms and tectonic movements of landmasses and ocean basins through time;
- study patterns and processes of evolution, extinction, and speciation; and
- identify past and potential future human-caused effects to global environments and climates (Murphey and Daitch 2007).

## **RESOURCE ASSESSMENT GUIDELINES**

Paleontological resources are limited, nonrenewable resources of scientific, cultural, and educational value and are afforded protection under federal (National Environmental Policy Act), state (California Environmental Quality Act [CEQA]), and local (County of Orange) laws and regulations. This report satisfies project requirements in accordance with CEQA (13 Public Resources Code [CAL. PUB. RES.] § 2100 et seq.) and CAL. PUB. RES. § 5097.5 (Stats. 1965, c. 1136, p. 2792). This report also complies with guidelines and significance criteria specified by the SVP (1995).

## **Laws, Ordinances, Regulations, and Standards**

Fossils are classified as nonrenewable scientific resources and are protected by various laws, ordinances, regulations, and standards (LORS) across the country. The SVP (1995) has established professional standards for the assessment and mitigation of adverse impacts to paleontological resources. This paleontological assessment was conducted in accordance with the LORS that are applicable to paleontological resources within the project area.

## **Professional Standards**

The SVP has established standard guidelines (SVP 1995) that outline professional protocols and practices for conducting paleontological resource assessments and surveys, monitoring and mitigation, data and fossil recovery, sampling procedures, and specimen preparation, identification, analysis, and curation. Most practicing, professional vertebrate paleontologists adhere closely to the SVP's assessment, mitigation, and monitoring requirements, as specifically provided in its standard guidelines. Most state regulatory agencies with paleontological LORS accept and use the professional standards set forth by the SVP.

As defined by the SVP (1995:26), significant nonrenewable paleontological resources are defined as

...fossils and fossiliferous deposits here restricted to vertebrate fossils and their taphonomic and associated environmental indicators. This definition excludes invertebrate or paleobotanical fossils except when present within a given vertebrate assemblage. Certain invertebrate and plant fossils may be defined as significant by a project paleontologist, local paleontologist, specialists, or special interest groups, or by lead agencies or local governments.

As defined by the SVP (1995:26), significant fossiliferous deposits are defined as

A rock unit or formation which contains significant nonrenewable paleontologic resources, here defined as comprising one or more identifiable vertebrate fossils, large or small, and any associated invertebrate and plant fossils, traces and other data that provide taphonomic, taxonomic, phylogenetic, ecologic, and stratigraphic information (ichnites and trace fossils generated by vertebrate animals, e.g., trackways, or nests and middens which provide datable material and climatic information). Paleontologic resources are considered to be older than recorded history and/or older than 5,000 years BP [before present].

Based on the significance definitions of the SVP (1995), all identifiable vertebrate fossils are considered to have significant scientific value. This position is adhered to because vertebrate fossils are relatively uncommon, and only rarely will a fossil locality yield a statistically significant number of specimens of the same genus. Therefore, every vertebrate fossil found has the potential to provide significant new information on the taxon it represents, its paleoenvironment, or its distribution. Furthermore, all geologic units in which vertebrate fossils have previously been found are considered to have high sensitivity. Identifiable plant and invertebrate fossils are considered significant if found in association with vertebrate fossils or if defined as significant by project paleontologists, specialists, or local government agencies.

A geologic unit known to contain significant fossils is considered to be "sensitive" to adverse impacts if there is a high probability that earthmoving or ground-disturbing activities in that rock unit will either disturb or destroy fossil remains directly or indirectly. This definition of sensitivity differs fundamentally from the definition for archaeological resources as follows:

It is extremely important to distinguish between archaeological and paleontological (fossil) resource sites when defining the sensitivity of rock units. The boundaries of archaeological sites define the areal extent of the resource. Paleontologic sites, however, indicate that the containing sedimentary rock unit or formation is fossiliferous. The limits of the entire rock formation, both areal and stratigraphic, therefore define the scope of the paleontologic potential in each case (SVP 1995).

Many archaeological sites contain features that are visually detectable on the surface. In contrast, fossils are contained within surficial sediments or bedrock and are therefore not observable or detectable unless exposed by erosion or human activity. In summary, paleontologists cannot know either the quality or quantity of fossils prior to natural erosion or human-caused exposure. As a result, even in the absence of surface fossils, it is necessary to assess the sensitivity of rock units based on their known potential to produce significant fossils elsewhere within the same geologic unit (both within and outside of the project area), a similar geologic unit, or based on whether the unit in question was deposited in a type of environment that is known to be favorable for fossil preservation. Monitoring by qualified paleontologists greatly increases the probability that fossils will be discovered during ground-disturbing activities and that, if these remains are significant, successful mitigation and salvage efforts may be undertaken to prevent adverse impacts to these resources.

## **Paleontological Sensitivity**

Paleontological sensitivity is defined as the potential for a geologic unit to produce scientifically significant fossils. This is determined by rock type, past history of the geologic unit in producing significant fossils, and fossil localities recorded from that unit. Paleontological sensitivity is derived from the known fossil data collected from the entire geologic unit, not just from a specific survey. Fossils are considered to be scientifically significant if they meet or potentially meet any one or more of the following criteria (Eisentraut and Cooper 2002):

- **Taxonomy:** Fossils that are scientifically judged to be important for representing rare or unknown taxa, such as defining a new species
- **Evolution:** Fossils that are scientifically judged to represent important stages or links in evolutionary relationships, or fill gaps or enhance under represented intervals in the stratigraphic record
- **Biostratigraphy:** Fossils that are scientifically judged to be important for determining or constraining relative geologic (stratigraphic) age, or for use in regional to interregional stratigraphic correlation problems
- **Paleoecology:** Fossils that are scientifically judged to be important for reconstructing ancient organism community structure and interpretation of ancient sedimentary environments
- **Taphonomy:** Fossils that are scientifically judged to be exceptionally well or unusually/uniquely preserved, or are relatively rare in the stratigraphy

Guidelines set forth by Eisentraut and Cooper (2002) rank the paleontological sensitivities of all geologic units that occur in Orange County (Table 1).

**Table 1.** Paleontological Resource Sensitivity Ranking for Geologic Units in Orange County, California.

<b>Sensitivity</b>	<b>Preservation and Significance</b>	<b>Research Importance</b>
Very High	Very significant and of a critical age	Very important
High	Quality preservation, scientifically significant	Important for research and or very important for display
Moderate	Abundant and of good quality	Important for education and display
Low	Poor preservation	Useful for educational purposes
None	No preservation	None

For geologic units with moderate to high potential, full-time monitoring is generally recommended during any project-related ground disturbance. For geologic units with low potential, protection or salvage efforts will not generally be required. For geologic units with undetermined potential, field surveys by a qualified vertebrate paleontologist should be conducted to specifically determine the paleontologic potential of the rock units present within the study area.

## **PROJECT LOCATION AND DESCRIPTION**

The project site consists of a 10.7-acre site formerly used by the Los Angeles DWP for power plant facilities and operations. The vacant site is generally bounded by Marina Drive to the north, 1st Street to the east, the Rivers End Staging Area to the south, and the San Gabriel River to the west. Surrounding land uses include multi-family residential uses to the north; the Marina Community Park and single-family residential uses to the east; vacant land, the Rivers End Cafe/parking, and a public beach area to the south; and the San Gabriel River and associated bike trail to the west. Figure 1 shows the project location on the U.S. Geologic Survey Seal Beach, California 7.5-minute quadrangle; Figure 2 shows an aerial photograph of the project area.

The proposed project involves amendments to the 1996 DWP Specific Plan that would allow for the development of a 48-lot residential development. The residential uses would be located on the northern 4.24 acres of the project site. Bay City Partners, LLC would construct the project in one phase that would include the finished pads and all necessary infrastructure. Residential units would be developed individually by homeowners, depending on market conditions and demand.

## **PROJECT PERSONNEL**

SWCA Paleontology Lead, Jessica DeBusk, requested the museum records search, reviewed published and unpublished literature and geologic mapping, and authored this report. Geographic Information Systems Specialist, Emily Kochert, produced the graphics. Technical Editor, Linda Tucker Burfitt, edited this report. Formatter, Debbi Smith, formatted this report. Orange County Certified Paleontologist and SWCA Office Principal, Cara Corsetti, provided quality assurance and quality control review of this report.



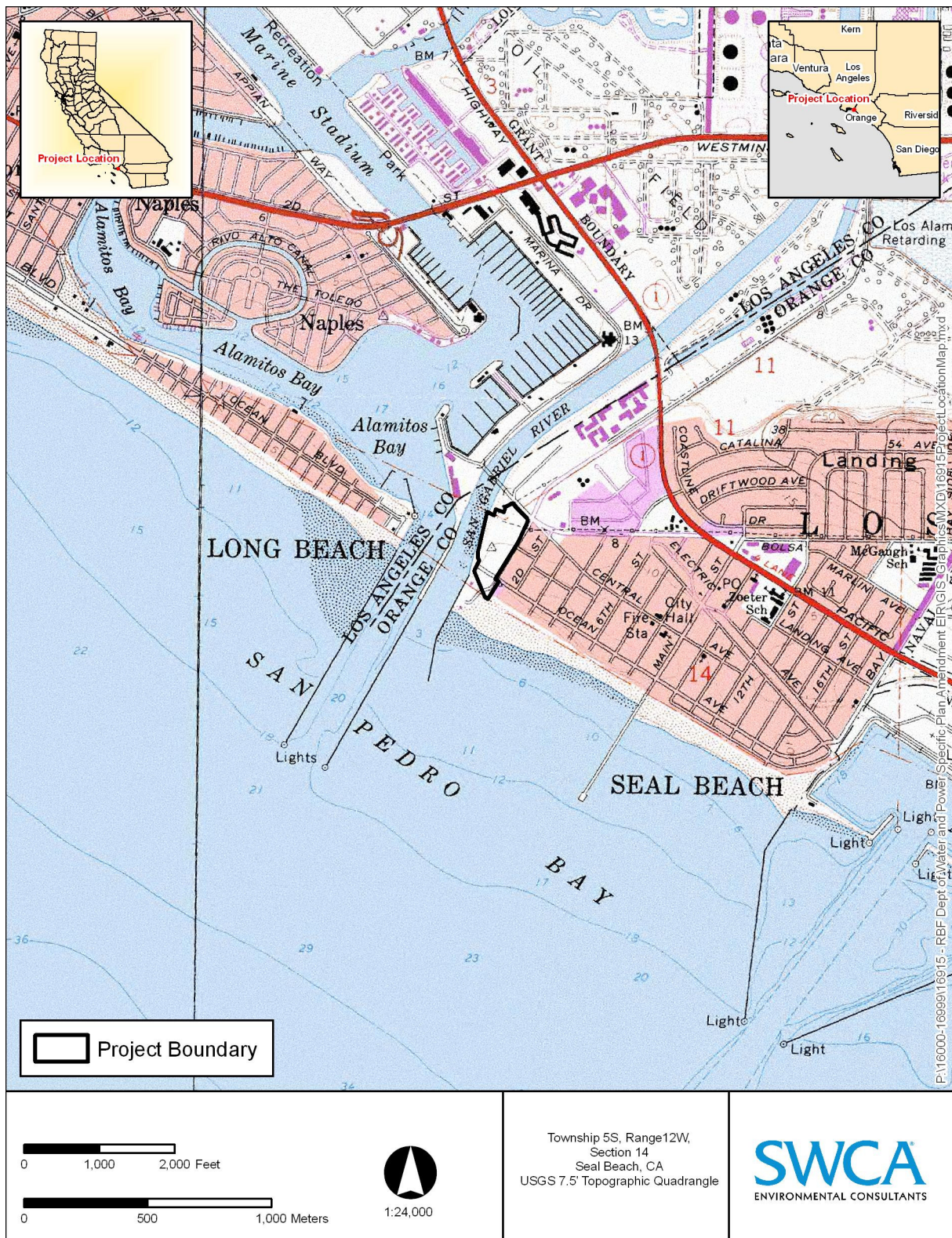


Figure 1. Project area.





**Figure 2.** Aerial map.



## **METHODS**

Due to the nature of the fossil record, paleontologists cannot know either the quality or the quantity of fossils present in a given geologic unit prior to natural erosion or human-caused exposure. Therefore, in the absence of surface fossils, it is necessary to assess the sensitivity of rock units based on their known potential to produce scientifically significant fossils elsewhere within the same geologic unit (both within and outside of the project area) or a unit representative of the same depositional environment.

For this project, a museum records search was performed on May 31, 2011, by Vanessa Rhue at the Vertebrate Paleontology Section of the Natural History Museum of Los Angeles County (LACM) to determine whether there are any known vertebrate fossil localities in or near the project area. A review of published and unpublished literature and geologic maps was conducted to determine the geology of the project area. Using the results of the records search and literature and map review, the paleontological sensitivity of the project area was determined. An assessment of the potential impacts to nonrenewable paleontological resources was made, and mitigation measures specific to this project were developed in accordance with the SVP's professional standards and guidelines (1995).

## **GEOLOGY AND PALEONTOLOGY**

### **Geologic Setting**

California is composed of the following twelve geomorphic provinces, each distinguished from one another by having unique topographic features and geologic formations: 1) the Sierra Nevada, 2) the Klamath Mountains, 3) the Cascade Range, 4) the Modoc Plateau, 5) the Basin and Range, 6) the Mojave Desert, 7) the Salton Trough (historically known as the Colorado Desert), 8) the Peninsular Ranges, 9) the Transverse Ranges, 10) the Coast Ranges, 11) the Great Valley, and 12) the Offshore area. Orange County is located within the northern region of the Peninsular Ranges geomorphic province, which extends north to the foothills of the San Bernardino and Santa Monica mountains, and south to the 28th parallel in Baja California, Mexico. This province is bounded to the north by the Transverse Ranges and to the east by the Colorado Desert, with most of the province continuing southward beyond the United States and into Mexico (Norris and Webb 1976). The dominant structural feature in the Peninsular Ranges geomorphic province is a series of northwest-trending faults. These divide the province into numerous fault blocks, which are at variable elevations. In the northern part of the province (the Los Angeles Basin), the major faults are Cenozoic in age and are terminated by the east-trending faults of the Transverse Ranges province. Many of these faults are seismically active (Yerkes et al. 1965).

Orange County is further divided into the following four geologic provinces: 1) Santa Ana Mountains Province, 2) Coyote-Puente Hills Province, 3) Santa Ana Valley-Capistrano Valley Province, and 4) Coastal Province. The project is located in the Coastal Province, which includes the San Joaquin and Capistrano Hills and the mesas along the Newport-Huntington Beach coastal areas.

The geologic history of this region begins during the Mesozoic Era, approximately 150 million years ago (Ma). During the late Jurassic to late Cretaceous, the North American continent was drifting northwestward and colliding with Pacific Oceanic plates along an extensive subduction zone at its western margin. Increased volcanism accompanied this tectonic activity, and much of the igneous and metamorphic bedrock of southern California, including the Santa Ana Mountains, was formed during this time (Yerkes et al. 1965). The collision of the Pacific Plate with the North American Plate during early Miocene time, approximately 25 Ma, was the major tectonic event that initiated events leading to the current structural organization of the California continental coastline and the San Andreas Fault zone (Ingle 1981). Locally, basin subsidence and the subsequent transgression of an arm of the Pacific Ocean,

later known as the Capistrano Embayment of the Greater Los Angeles Basin, resulted in the nearly continuous deposition of approximately 20,000 feet of fossiliferous marine sediments ranging in age from approximately 25 to 5 Ma (Ehlig 1979; Ingle 1971). More sedimentary deposition signaled the initial advance of the sea during the early Miocene (approximately 20 Ma) and further basin subsidence in the middle and late Miocene (between approximately 15 and 10 Ma). Major tectonic uplift during the Pliocene and Pleistocene (2.6 Ma–10,000 years BP) resulted in the uplift of the present Santa Ana Mountains along the Elsinore Fault system, with subsequent erosion blanketing the lowlands with Quaternary (Pleistocene to early Holocene) alluvium and terrace deposits (Schoellhamer et al. 1981).

## **Site-specific Geology and Paleontology**

According to geologic mapping by Morton and Miller (1981), the project area is immediately underlain by marine terrace deposits of Pleistocene age (2.6 Ma–10,000 years BP) and Holocene age (10,000 years BP–Recent) alluvium and colluvium (Figure 3). These units, and their paleontological sensitivity, are discussed below.

### ***Pleistocene Marine Terrace Deposits***

Marine terrace deposits consist of medium to coarse-grained, cross-laminated sandstone and silty sandstone, and are variously tan, orange, gray, white, and greenish tan, with scattered semi-angular to well-rounded pebbles and some small cobbles. They also commonly contain accumulations of gravel lags (often shelly) and pebble-size channel conglomerate with rip-up clasts. Pleistocene terrace sediments were deposited on wave-cut platforms and represent nearshore and beach environments that are similar to those along the southern California coast today. These deposits are typically highly fossiliferous, containing abundant marine mollusks and other marine invertebrates, as well as locally abundant mostly marine vertebrate fossils. These deposits are considered to have high paleontological sensitivity in Orange County (Eisentraut and Cooper 2002).

### ***Palos Verdes Sand***

According to Rhue (2011), the Pleistocene terrace deposits near the project area are equivalent to the Palos Verdes Sand. The Palos Verdes Sand was deposited nearly 130,000 years ago (middle to late Pleistocene) in a sublittoral environment in warm water that was up to about 90 feet deep (Jacobs 2005). This rock unit was originally identified by Arnold and Arnold (1902) as the “upper San Pedro series,” but was officially renamed as the Palos Verdes Sand by Woodring et al. (1946). It consists of a bed of lime-hardened gravel overlain by a thick layer of fine-grained sand, silty sand, and silt (Arnold and Arnold 1902, Woodring et al. 1946); it ranges in thickness from a few inches to up to 15 feet, and is locally sloping seaward (Miller 1971).

The Palos Verdes Sand is well known for containing a diverse assemblage of fossils, including terrestrial vertebrates, marine vertebrates, and marine invertebrates in particular. The invertebrate fauna found within this rock unit is shallow water fauna (Woodring 1952) with approximately 250 species, approximately 20 of which are north of their present range by up to 100 miles. The fossils found within the Palos Verdes Sand are often referred to as belonging to the “San Pedro fauna” due to their close association with that rock unit and the fauna within it (Miller 1971). Due to its proven potential to yield scientifically significant fossils, Palos Verde Sand is considered to have a high paleontological sensitivity (Figure 3).



**Figure 3.** Geology and paleontological sensitivity map.

## Holocene Alluvium and Colluvium

Quaternary alluvium and colluvium of Holocene age consists variously of unconsolidated clay, sand, gravel, and pebbles and is generally deposited as fluvial and alluvial deposits from surrounding higher elevations and local drainages. Although Holocene-aged sediments often contain the remains of modern organisms, they are too young to contain significant paleontological resources. However, paleontologically sensitive marine terrace deposits of Pleistocene age and the Palos Verde Sand may be present at an unknown but potentially shallow depth beneath these sediments.

Quaternary alluvium of Holocene age is mapped within the north and far south and southwestern portions of the project area. As stated above, Holocene alluvium is unlikely to contain fossils and is considered to have no paleontological sensitivity in Orange County (see Figure 3).

## RESULTS

Museum collections maintained by the LACM contain no recorded vertebrate fossil localities in the project area; however, at least five vertebrate localities have been recorded nearby in the same or similar geologic deposits occurring in the project area. These localities have yielded abundant species of marine vertebrates, including sharks and rays, as well as terrestrial mammals ranging in size from mammoths and ground sloths to pocket gophers. All fossil localities were discovered within older Quaternary deposits (i.e., Pleistocene-age deposits). The museum records search results are summarized in Table 2.

**Table 2.** Previously Recorded Vertebrate Fossil Localities near the Project Area

Locality Number and Approximate Location	Taxa	Common Name
LACM 3757; south of 7 <sup>th</sup> Street and east of the Pacific Coast Highway	<i>Myliobatis</i>	Eagle ray
	<i>Rhinobatoidea</i>	Skate
	<i>Carcharodon</i>	White shark
	<i>Prionace</i>	Blue shark
	<i>Carcharhinidae</i>	Requiem shark
	<i>Damalichthys and Rhacochilus</i>	Surfperch
	<i>Genyonemus</i>	Croaker
	<i>Clemmys</i>	Pond turtle
	<i>Chendytes</i>	Diving duck
	<i>Gavia</i>	Loon
	<i>Canis</i>	Dog
	<i>Enhydra</i>	Sea otter
	<i>Equus</i>	Horse
	<i>Hemiauchenia</i>	Camel
	<i>Thomomys</i>	Pocket gopher
LACM 6746; along 7 <sup>th</sup> Street west of Pacific Coast Highway	<i>Mammuthus</i>	Mammoth

**Table 2.** Previously Recorded Vertebrate Fossil Localities near the Project Area

Locality Number and Approximate Location	Taxa	Common Name
LACM 2031; north-northwest of the project area near the intersection of Grand Avenue and East Livingston Drive	<i>Bison antiquus</i>	Bison
	<i>Carcharhinus</i>	Dusky shark
	<i>Galeorhinus galeus</i>	Soupfin shark
	<i>Sphyrna</i>	Hammerhead shark
	<i>Triakis semifasciata</i>	Leopard shark
	<i>Heterodontus francisci</i>	Horn shark
	<i>Dasyatis</i>	String ray
	<i>Myliobatis californica</i>	Eagle ray
	<i>Raja</i>	Skate
	<i>Rhinobatos productus</i>	Guitarfish
	<i>Squalus acanthias</i>	Dogfish
	<i>Squatina californica</i>	Angel shark
	<i>Porichthys notatus</i>	Midshipman
LACM 7739; near Bluff Park	<i>Chilara taylori</i>	Cusk-eel
	<i>Cymatogaster aggregata</i> , <i>Damalichthyes</i> , <i>Embiotoca jacksoni</i> , <i>Jyperprosopon agenteum</i> , <i>Micrometrus aurora</i> , and <i>Phanerodon furcatus</i>	Surfperches
	Gobiidae	Goby
	<i>Genyonemus lineatus</i>	Croaker
	<i>Seriphus politus</i>	Queenfish
	<i>Sphyræna argentea</i>	Barracuda
	<i>Citharichthys sordidus</i> and <i>C. stigmaeus</i>	Sanddabs
	<i>Glyptocephalus zachirus</i> and <i>Lyopsetta exilis</i>	Sole
	Cottidae	Sculpin
	<i>Sebastes goodie</i>	Rockfish
	Clupeidae	Herring
	Mammalia	Mammal, undetermined
LACM 1005; opposite Bixby Park at approximately 17 <sup>th</sup> Place	<i>Mammuthus columbi</i>	Mammoth
	<i>Nothrotheriops shastensis</i>	Ground sloth

Source: Rhue (2011).

## **CONCLUSIONS**

The destruction of fossils as a result of human-caused ground disturbance has a significant cumulative impact, because it makes biological records of ancient life permanently unavailable for study by scientists. Implementation of proper mitigation measures can, however, reduce the impacts to the paleontological resources to below the level of significance. The project area is, in part, underlain by geologic deposits determined to have a high paleontological sensitivity; therefore, any project-related ground disturbances (such as mass grading, excavation, and/or trenching) within Pleistocene marine terrace deposits or the Palos Verdes Sand are likely to result in adverse impacts to significant paleontological resources unless proper mitigation measures are implemented. Project-related ground disturbances within Holocene alluvium and colluvium are less likely to affect paleontological resources and should be monitored on a part-time basis to ensure that no underlying sensitive units (i.e., Pleistocene age deposits) are impacted.

## **RECOMMENDED MITIGATION MEASURES**

The following mitigation measures have been developed in accordance with the SVP (1995) standards and Orange County guidelines and meet the paleontological requirements of CEQA. These mitigation measures have been used throughout California and have been demonstrated to be successful in protecting paleontological resources while allowing timely completion of construction.

- A qualified paleontologist will be retained to supervise monitoring of construction excavations and to produce a paleontological monitoring and mitigation plan for the proposed project.
- Ground disturbances in topsoil or Holocene alluvium and colluvium will not require full-time monitoring because these sediments are not determined to have a paleontological sensitivity. However, any substantial, project-related ground disturbances within paleontologically sensitive Pleistocene marine terrace deposits or Palos Verde Sand will be monitored by a qualified paleontological monitor on a full-time basis, because these geologic deposits are considered to have a high paleontological sensitivity. The frequency of monitoring may be reduced at the discretion of the qualified paleontologist if the impacted sediments are determined to have a low potential to yield significant fossil resources upon further examination of the sediments during active excavations.
- Paleontological monitoring will include inspection of exposed rock units during active excavations within sensitive geologic sediments. The monitor will have authority to temporarily divert excavation operations away from exposed fossils to professionally and efficiently recover the fossil specimens and collect associated data. All efforts to avoid delays in project schedules will be made. Monitors will be equipped with the necessary tools for the rapid removal of fossils and retrieval of associated data to prevent construction delays. This equipment will include handheld global positioning system receivers, digital cameras and cell phones, as well as a tool kit containing specimen containers and matrix sampling bags, field labels, field tools (awls, hammers, chisels, shovels, etc.) and plaster kits.
- At each fossil locality, field data forms will be used to record pertinent geologic data, stratigraphic sections will be measured, and appropriate sediment samples will be collected and submitted for analysis.
- Upon the completion of fieldwork, recovered fossils will be prepared to the point of curation, identified by qualified experts, listed in a database to facilitate analysis, and repositied in a designated paleontological curation facility.

- The qualified paleontologist will prepare a final monitoring and mitigation report to be filed with the client, the lead agency, and the repository. The report will include, but will not be limited to, a discussion of the results of the mitigation and monitoring program, an evaluation and analysis of the fossils collected (including an assessment of their significance, age, and geologic context), an itemized inventory of fossils collected, a confidential appendix of locality and specimen data with locality maps and photographs, and an appendix of curation agreements and other appropriate communications.

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